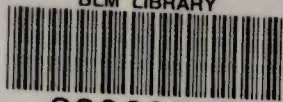


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The Cooperative Conservation Based Strategic Plan for the Abandoned Mine Lands Program

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Bureau of Land Management

The Cooperative Conservation Based Strategic Plan for the Abandoned Mine Lands Program

March 2006

Developed by:

Bureau of Land Management

Division of Engineering and Environmental Services

And

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Bureau of Land Management

The Cooperative Conservation Based Strategic Plan for the Abandoned Mine Lands Program

1. Introduction

The Abandoned Mine Lands (AML) Program Strategic Plan establishes the context whereby the Bureau of Land Management (BLM) mitigates and remediates hardrock AML sites on or affecting public lands. The plan supports the Department of the Interior's (DOI) strategic plan, and is implemented through BLM's Annual Work Plan (AWP) and State and Field Office operational plans.

The AML program is a "white hat" restoration program, and exemplifies cooperative conservation. This plan applies AML program business processes in the context of the DOI's Cooperative Conservation approach.

- Cooperation in gauging risks and setting priorities,
- Communicating program objectives and values, and
- Consultation with government and non-government partners.

Building on the initial AML pilot efforts from the 1990s, the AML program has developed bureauwide in the western states, and has matured. It is timely and appropriate to look forward and plan for the future of the program. The results of our planning efforts are reflected herein.

This plan provides field managers and staff with a policy framework for setting local or state priorities and provides senior management and budget personnel with explanations of program values, processes, issues, and factors that may impact the program's future over the plan's timeframe. The plan links national goals with State Office multi-year operational plans.

1.1. Applicability

The plan applies to AML water quality projects funded under the Soil, Water and Air subactivity (1010) and physical safety hazard projects funded under the Hazard Management and Resource Restoration subactivity (1640), including the Special Cleanup Fund; and projects funded under the Department's Central Hazardous Materials Fund (subactivity 2640). The plan facilitates coordination when projects are proposed for funding under multiple subactivities.

1.2. Timeframe

The plan covers the remaining period of the DOI and BLM current five-year strategic and operational plan (FYs 2003 – 2008) and provides a foundation for development of the next plan (FYs 2009 – 2013).

1.3. Assumptions

The plan assumes that program funding will remain level except for increases to cover uncontrollable costs (e.g., salaries and benefits). Without additional funds, it is assumed that costs of monitoring and maintenance of remediated sites will begin to chip away at available funds for new projects. In addition, the AML program will continue to reflect a bureauwide scope throughout the western states.

Appendix A provides background information about hardrock AML site impacts and BLM's AML inventory.

2. Strategic Approach

2.1. Program Objectives

The purpose of BLM's AML program is to assist DOI, BLM and partners in fulfilling broad missions of improving water quality and enhancing public safety. Our vision is to mitigate hazards to protect public health and safety, and restore watersheds for resources, recreation, fish, and wildlife by remediating all hardrock AML sites on or affecting the public lands. Key program objectives are to:

- Identify sites.
- Prioritize sites based on risks.
- Remediate sites with available resources over specified time periods.
- Report program accomplishments.
- Conduct education and outreach activities to warn people about the potential dangers of AML sites.

In so doing, BLM aims to:

- Maintain a working inventory of known AML sites, with accurate and complete information needed by the public and decision-makers.
- Select from the inventory sites to be remediated based on priority criteria.
- Ensure that each State Office with AML sites receives its fair share of available funds.
- Complete ongoing remediation and mitigation projects before engaging in new projects.
- Conduct further inventory and field validation work in accordance with land use planning efforts.
- Report, manage, and reduce contingent environmental cleanup liabilities.
- Leverage funds and achieve cost savings through partnerships, use of volunteers, and cost avoidance/cost recovery authorities.
- Provide needed policy, direction, and program management tools to State and Field Offices.

2.2. Program Goals

The following matrix shows how the AML program fits within the DOI and BLM strategic plans and budget priorities.

Area	Resource Protection	Serving Communities
DOI Strategic Goal	Protect the Nation's natural, cultural and heritage resources	Safeguard lives, property and assets, advance scientific knowledge, and improve the quality of life for communities we serve
DOI End Outcome Goal	Improve Health of Watersheds, Landscapes, and Marine Resources that are DOI Managed or Influenced in a Manner Consistent with Obligations	Protect Lives, Resources, and Property

	Regarding the Allocation and Use of Water	
DOI End Outcome Performance Measures	Land Health: Mines 1.1.08 Number of land acres reclaimed or mitigated from the effects of degradation from past mining.	Improve Public Safety and Security and Protect Public Resources from Damage 4.1.13 Mitigate Hazards: Percent of physical and chemical hazards mitigated within 120 days to ensure visitor or public safety.
BLM Budget Emphasis Areas	Successful management of rangelands and forests to achieve healthy and productive watersheds by improving water quality. Improve dispersed recreational opportunities by enhancing visitor safety.	Improve water quality. Enhance visitor safety.
Financial Statements	Reduce contingent environmental cleanup liabilities	

2.3. Performance Measures

The following table shows FY 2005 actual accomplishment figures, FY 2006 and FY 2007 planned targets. While outyear forecasting is challenging, AML program leads are reviewing planned projects and associated workload in order to develop supportable targets for the outyears through FY 2013.

AML Program Elements	Measure	FY 05 Actual	FY 06 Target	FY 07 Target
BH – Inventory AML Sites	# of sites	829	1,062	1,072
HP - Remediate AML Physical Safety Hazards	# of sites	175	242	267
JK - Implement AML Projects to Restore Water Quality	# acres	934	300	489
MG - Monitor and Maintain AML, Hazmat & NRDAR Sites (Sites where cleanup actions are completed)	# of sites	n/a	n/a	tbd
NP - Evaluate PRPs for Cost Avoidance/Recovery	# actions completed	32	58	43
NQ – Process Hazmat Cost Avoidance/Recovery Cases	# cases referred	10	19	23
Note: MG, NP & NQ include both AML & Hazmat				

2.4. Risk-Based Approach

Most estimates about hardrock AML sites maintain that only a relatively small portion of sites cause significant environmental degradation (primarily through water pollution) or pose physical safety hazards. Of the 11,000 sites in BLM's inventory, most are 5 to 10 acres in size and conventional in complexity and impact.

Experience from initial pilot AML watershed projects in Colorado and Montana has shown that it may not be necessary to remediate every site. For example, the U.S. Geological Survey was able to identify through tracer studies that only a fraction of the 1,000+ AML sites in Colorado's Upper Animas River watershed were contributing significantly to water pollution.



Similarly, from a risk standpoint, there is a higher level of visitor safety expectations at places where the BLM has invited the public to visit, such as a designated recreation area, as opposed to a remote location on public lands. Accordingly, higher priority needs to be placed on cleaning up AML sites in close proximity to designated recreation areas.

2.5. Priority Ranking Criteria

BLM has established national level priority ranking criteria used to nominate sites for funding (see Appendix B). These criteria are applied by State Offices and their partnering agencies and organizations and reflected in multi-year AML plans and in BLM's Annual Work Plan. Specific projects are evaluated through project peer review processes.

2.6. Implementation

The AML program is administered bureauwide as follows:

- Washington Office. The AML program is part of the Minerals, Realty and Resource Protection directorate (WO-300) and the Division of Engineering and Environmental Services (formerly the Protection and Response Group) (WO-360). The Lands and Resources Projects Division (WO-330-D) hosts the Abandoned Mine Module (AMM), the AML inventory and program management database. The Renewable Resources and Planning directorate (WO-200) coordinates funding, water quality, fisheries, land use planning, recreation, and cultural heritage program activities with AML.
- State and Field Offices. AML Program Leads in the State and Field Offices are split between full-time and collateral duty (often with Hazard Management or Mining Law Administration responsibilities).
- National Science and Technology Center (NSTC). NSTC provides technical expertise and support, national environmental service contractors, and assistance with searches for potentially responsible parties under CERCLA.
- National Training Center (NTC). NTC holds an AML site characterization course and integrates AML issues in a host of Hazmat and related courses.

The AML program has a business process that can be managed by tools such as the AMM database, the BLM Management Information System and its several modules (e.g., Budget Planning System, Performance Module, and Cost Management Reports). These tools are available to all AML program personnel throughout the bureau.

Development of an AML program manual and handbook to consolidate and update the myriad of Instruction Memoranda and other program materials is currently underway.

AML program coordinators have collaborated on specific needs and actions that are necessary and desirable to make progress towards achieving program objectives. An analysis of these actions shows that they are best conveyed within the context of the DOI's approach to cooperative conservation. These actions are explained in the next section.

Actions

2.7. Cooperative Conservation

Cooperation signifies emphasis on voluntary action, partnerships, collaborative work, and commitment to work in concert with all partners to attain common conservation goals.

Reduce Burden on Taxpayers

2.7.1.1. Potentially Responsible Parties

BLM will continue to pursue potentially responsible parties (PRPs) under CERCLA. BLM will use the Abandoned Mine Module (AMM) database to ensure that PRP searches are conducted on all water quality projects (e.g., 1010 subactivity funded projects). BLM will also conduct a CERCLA cost recovery case review for eligible AML projects to ensure that SOs are following the applicable processes. NSTC will conduct the study, building off of an initial review of the Alaska State Cost Recovery Matrix Project. Idaho and Utah State Offices will be reviewed in FY 2006.

2.7.1.2. CERCLA "Comfort Letters"

BLM, in consultation with the Office of the Solicitor, will consider use of CERCLA "comfort letters" on a case-by-case basis with non-labile third parties who want to approach BLM with a plan to restore abandoned mine sites. This approach is being used by the Nevada SO at the MacAurthur Pit site.

2.7.1.3. Mining Claimants

The AML and Solid Minerals programs will develop policy on mining claimant responsibilities related to AML sites. This policy will help determine if the site falls within the parameters of the AML program or should be addressed through BLM's surface management program.

2.7.2. Increase Collaborative Work

2.7.2.1.1. Service First Partnership

BLM will work with the Forest Service to apply the Service First approach in the context of AML program coordination. Examples where this approach may make sense range from joint field operations activities on specific AML sites, technical training, and development of shared policies and strategies.

2.7.2.1.2. Reducing Risks and Liabilities

DOI bureaus must prepare annual audited financial statements in accordance with the Chief Financial Officers (CFO) Act of 1990 and the Government Management Reform Act of 1994. This

requirement includes financial reporting of contingent environmental cleanup liabilities (ECLs). ECLs are future costs associated with the remediation (including containment, treatment, or removal) of contamination that could pose a threat to public health or the environment. BLM will ensure that AML sites posing environmental risks are reported accurately. These sites are already given priority through the water quality criteria and project selections.

2.7.3. Pursue Partnerships with External Organizations and Individuals

BLM State and Field Offices have developed extensive partnerships at all government levels: Federal, State, regional, local, and even international. Within the DOI, BLM coordinates its program with the Office of Surface Mining, U.S. Geological Survey, Bureau of Reclamation, and National Park Service. Other Federal partners include the Forest Service, EPA, and U.S. Army Corps of Engineers. BLM also has partnerships with non-government organizations (NGOs) ranging from mining companies to public interest and volunteer groups. Examples of what partnerships have achieved include:

- California. BLM, EPA, and the USFS are finishing the last phase of a multi-year multi-agency mercury cleanup effort in the Rinconada Mine located in the headwaters of the Salinas River. Reclamation of over 50 acres of stream and historic mercury mill sites and removal of 1,700 tons of mercury mill tailings will reduce the mobilization of mercury and improve downstream conditions.
- Nevada. BLM recently put together one of the most ambitious AML efforts ever undertaken by organizing a broad partnership that included the Nevada mining industry, state officials, independent scientists, and other volunteers. The group backfilled 55 mines in just a few short days. The cost to taxpayers was minimal. The value to the public, now and for the future, is beyond measure.
- New Mexico. The Orogrande Mining District is within easy driving distance of El Paso and Alamogordo and is used extensively by the public for rock hounding, recreational mining, hiking, and exploring. It is the highest density physical hazard area in the State that includes BLM-administered land, involving over 350 mine sites and 1000 mine features in a 2 square-mile area. BLM and the New Mexico Abandoned Mine Land Bureau closed 56 physical hazard features, including a 200-foot deep shaft on patented land where a high school student fell to his death in March 2000.
- Oregon. BLM and the Oregon Department of Environmental Quality have collaborated successfully in several watersheds to remove contaminated mine sediments and reduce acid mine drainage. As a result, improvements have been made benefiting fisheries habitat for salmon, steelhead, and redband trout.

BLM will continue to maintain existing working relationships with these organizations, and will pursue additional partnering opportunities. A list of non-Federal agency and organization partnerships can be found in Appendix C.

In addition, the BLM will continue to work with private landowners, particularly in split-estate (surface/sub-surface) situations. The Arizona State Office has taken the lead in applying mining claim use and occupancy management to prevent more abandoned mines from developing.

2.7.4. Leverage Funds

Nationally, BLM and its partners have limited funds for restoring abandoned mine lands. This makes it imperative to leverage funds effectively wherever possible. Moreover, the watershed approach envisions that partnering agencies and landowners will do just that. While most partnerships necessarily involve project coordination and pooling of funds, some have resulted in more significant leveraging.

Several western States receive AML grants from the Office of Surface Mining. While abandoned coal mine sites are the primary emphasis, some States have completed (or are well on their way to completing) their coal AML sites and have the flexibility to apply funding to non-coal sites. Examples of fund leveraging achieved through SMCRA-funded partnerships include:

- Montana. A cooperative effort by the State of Montana, BLM, twenty private landowners, and several contractors resulted in the restoration of 4 miles of stream channel on High Ore Creek and the reclamation of 4 mines in the watershed. Mill tailings and waste rock, from about 400,000 tons of ore milled at the Comet Mine, filled a large area of the High Ore Creek Valley and were retained behind a dam which had failed and allowed mine wastes to erode and be transported downstream to the Boulder River.
- Utah. BLM along with the State of Utah, the Forest Service and Tribal governments completed a five-year, multi-agency watershed partnership cleanup effort in Cottonwood Wash, located in a rural area of southeastern Utah. This watershed had been heavily impacted by uranium and vanadium mining which lead to its listing as an impaired watershed. By reclaiming 199 openings, plugging 282 open drill holes, reclaiming 265 mine waste dumps and 15.2 miles of mine access roads BLM and its partners were able to reduce the effects of uranium in this drainage.
- Wyoming. AML is major program to the State of Wyoming. The State receives \$30 million in SMCRA-based AML grants from OSM. Of that amount, Wyoming invests \$17-18 million each year on reclamation of AML sites on BLM land. Much of that investment is for uranium mine reclamation in the Gas Hills area.

In addition, some mining companies have been willing to enter into voluntary agreements to help fund AML remediation projects:

- In Colorado's Upper Animas River near Silverton, downstream fish populations are on an increasing trend, and there is evidence of self-sustaining fish populations in lower reaches. Partners have completed approximately 50 cleanup projects for a total of \$28.6 million at a cost of 10% of the typical Superfund mining cleanup. In the Animas, BLM has leveraged its cleanup funds of \$2.7 million by a ratio of 1 to 10.

Sometimes, damage assessments contribute funds to major restoration projects:

- In Idaho, BLM is working in cooperation with the EPA, State, Tribes, County, and other Federal agencies to proactively address AML issues in the Coeur d'Alene Basin. This is one of the largest environmental cost-recovery efforts in history. BLM, along with other Interior, Agriculture, and Tribal staffs has continued to provide support for the massive

Natural Resources Damage Assessment lawsuit. The interagency team has started removal and/or stabilization of major areas of mine tailings and waste rock and restored channels and riparian zones within several important sub-watersheds. BLM has a major role in EPA's remedial plan for the Basin. The plan provides for a \$359 million remedy over a 30-year time frame.

BLM will continue to pursue its options to leverage funds in the future.

2.8. Cooperative Communication

Communication highlights commitment to transparency and accountability and the innovation that occurs through the exchange of ideas and ongoing dialogue with partners.

2.8.1. Enhance Openness

BLM will make program information more readily available. For example, BLM will post and distribute this strategy along with the State Office multi-year operational plans. AML inventory data has already been shared with EPA and the Forest Service, and BLM will continue to exchange record updates from its AMM database. In addition, BLM is currently developing an AML program manual and handbook. Drafts of these products will be shared with partners, and an opportunity will be provided to garner their suggestions and input.

2.8.2. Broaden Outreach

The AML webpage will be revised in conjunction with the Department and Bureau web redesign project. WO-360 has obtained contractor services for the initial redesign steps. BLM will continue to support the "Stay Out! Stay Alive!" (SOSA) program led by the U. S. Department of Labor's Mine Safety and Health Administration (MSHA). Support actions include updating, publishing and distributing the BLM AML safety brochure, and the SOSA video developed by the Utah SO. BLM will also seek to get on the agendas of external groups and, where possible, to educate external constituencies at their forums.

Recently, Trout Unlimited released "A Grass-roots Guide to Abandoned Mine Cleanup." The Guide includes important information on how to identify old mining sites that could be contributing significant amounts of pollution to the surrounding air, land and water, as well as how to initiate promising cleanup projects and eventually fund them. The BLM, EPA and Forest Service reviewed and contributed to the report and joined in the press release announcing its availability. Two BLM State Offices are partnering with Trout Unlimited, and BLM will work to expand the partnership to other States.

2.8.3. Report Progress and Success

FY 2007 marks the tenth year of Clean Water AML appropriations. BLM will develop a 10 Year AML Funding Anniversary Report to document program progress and success. In so doing, BLM will explore preparing this report with its partners. Preliminary discussions with Forest Service and EPA AML leads have been positive. Funding and contractor assistance will be needed.

2.8.4. Improve Accountability

2.8.4.1. AMM Database and System

BLM will continue to enhance the AMM database. Initiatives are already underway to combine AMM with the Site Cleanup Module (SCM). AMM and SCM have their own features and capabilities. The consolidated system will enable features and capabilities to be shared. The result will be an integrated system that eliminates duplicative records, facilitates program and project management, and enables reporting of Contingent Environmental Liabilities to the Department. Once consolidated, development of more useful reports for Program Assessment Rating Tool (PART) analysis and links to MIS and FFS/FBMS and other BLM databases will be pursued.

2.8.4.2. AML Project Peer Review Process

BLM will refine its AML project peer review process. Now that this process has been implemented for 2 fiscal years, lessons learned can be taken back to make the peer review process more useful. One area that needs to be factored into the process is State Office and Field Office performance. For FY 2008, the State Office multi-year plans will be able to provide a backdrop to gauge the status of long-term funding commitments and identify patterns and trends affecting future priorities and fund shifts among State Offices.

2.8.5. Foster Innovation through Exchange of Ideas

2.8.5.1. Technology Transfer

Greater efforts will be made to encourage and facilitate technology transfer. For example, BLM will continue to support the Acid Drainage Technology Initiative through participation by the Butte Field Office. BLM will seek to have local AML program staff represented and participating at periodic technical forums and conferences, such as the upcoming Billings Land Reclamation Symposium, and EPA Hard Rock Mining Conference in 2006. BLM has also discussed with the American Association of State Geologists placing AML topics on the agenda of its conferences. Coordination will also continue with USGS on AML-related science initiatives.

2.8.5.2. Share Best Practices

BLM will encourage more AML personnel to share their lessons learned and best practices. This can be done, for example, by providing specific AML content for NTC training courses in associated disciplines, developing technical information bulletins in conjunction with NSTC, and sharing information through BLM's Best Practices web site.

BLM also will continue its long-standing partnership with Bat Conservation International. This partnership has yielded useful guidance in handling the impact of mine closures on bat habitat and BLM will work to expand this effort throughout the State Offices.

2.8.5.3. Ongoing Dialogue With Partners

BLM will continue collaboration with Federal and State partners on AML program policies, issues, and strategies. Examples include:

2.8.5.3.1. Federal Mining Dialogue (FMD)

BLM is part of the FMD. The FMD is a forum for discussing and coordinating AML-related issues among Federal agencies. EPA serves as the lead agency. Core participating agencies and offices are the Forest Service, the U.S. Department of Agriculture's Hazardous Materials Management

Division. Other agencies participate when issues of interest arise. These include USGS, NPS, OSM, and the Office of Environmental Policy and Compliance, the Department of Justice, and the U.S. Army Corps of Engineers. The FMD has also provided input into the EPA's One Cleanup Program, which has taken on several non-legislative issues at a senior level.

2.8.5.3.2. National Association of Abandoned Mine Land Programs (NAAMLPL)

The NAAMLPL serves to foster positive and productive relationships between the states and tribes and the federal government. Though chiefly a coal-AML, SMCRA-based association, several western states with hardrock AML programs are members. BLM will support the Association by participating at its annual conferences. The NAAMLPL's next annual conference is being held in Billings, Montana in September 2006. The Montana State Office is coordinating with the State of Montana to assist with conference logistics.

2.8.5.3.3. Western Governors Association (WGA)

BLM will maintain its liaison with the WGA. WGA has conducted studies and issued reports on the magnitude of hardrock AML sites and has been involved in various legislative initiatives including proposed "Good Samaritan" amendments to the Clean Water Act.

2.8.5.3.4. Sustainable Development

BLM recognizes that abandoned mine restoration is an integral part of sustainable mineral development, a concept adopted by the United States and 192 other countries, to balance environmental, economic, and social considerations in planning for mining operations. The BLM participated in the first Pan-American Workshop on Abandoned Mines sponsored by the United Nations Environment Programme.

Currently, BLM is partnering with the Yukon River Inter-Tribal Watershed Council, Alaska, and Canadian agencies. The Yukon River is one of the longest rivers in North America, flowing 2,300 miles from its headwaters in Canada's Yukon Territory, through Alaska's interior to the Bearing Sea. Native people hunt and fish along the Yukon, the longest salmon run on earth. This partnership involves 34 Canadian First Nations and Alaskan Native Corporations. The Council has taken on an international role to facilitate AML site remediation and monitoring.

The BLM will continue to share information and assist other nations in developing their abandoned mine programs when opportunities arise.

2.9. Cooperative Consultation

Consultation signifies Interior's commitment to integrated decision-making, and our focus on using local information and knowledge to address place-based conservation challenges.

2.9.1. Integrate Decision-Making

BLM will work with programs supported by AML such as Hazard Management and Resource Restoration, Solid Minerals, Land Use Planning, Clean Water, Recreation, Cultural and Historic Preservation, and Fisheries. Such internal coordination is essential bureauwide. For example:

- Hazard Management and Resource Restoration: Fund leveraging; Avoidance of duplicative project funding; Consolidating AMM and SCM; CERCLA policy

development and implementation; and Reporting Contingent Environmental Cleanup Liabilities

- Solid Minerals: Mining claimant site restoration policy; LR 2000 enhancements.
- Clean Water Program: Water quality standards and Total Maximum Daily Loads; Watershed priorities and assessment.
- Land Use Planning: Future AML inventory and field validation priorities; NEPA policy.
- Recreation: Priorities for AML physical safety hazard mitigation at designated recreation areas, National Land Conservation System (NLCS) areas, OHV and other trails, and special recreation use permit areas.
- Cultural and Historic Preservation: NHPA requirements and policy.
- Fisheries: Fish habitat protection and restoration.
- Wildlife: Habitat and migration corridor protection and restoration.
- Special Status Species: habitat protection and restoration.

2.9.2. Increase Use of Local Information and Knowledge

2.9.2.1. Development of Multi-Year Plans

State Offices are developing workplans for AML program activities to foster long-range planning. These multi-year plans will provide critical information needed for interagency program coordination, facilitating strategic plan support, and for budget projections. Initial plans are in place. Plan updates will occur as part of the AML project peer review process. State Offices are to invite their partners to participate in developing and revising their plans.

2.9.2.2. BLM State Office AML Workshops

State Offices with significant AML program activities among their field offices will conduct periodic workshops in coordination with WO360. The workshops will provide an opportunity to obtain field office perspective and input into strategic planning for the AML program, and to operational AML plans.

3. Summary

This AML program strategic plan provides field managers and staffs with a policy framework for setting local or state priorities, and delineates program values for senior management and budget personnel. The AML program is a “white hat” restoration program, and exemplifies implementation of the DOI’s approach to cooperative conservation. Our program vision of eliminating all AML sites and risks to the public is far-reaching. Though unattainable in the near future, BLM can make significant progress.

AML sites are the product of over a century of historical mining, and it will take time and resources to address their impacts over a short timeframe. Fortunately, not all AML sites are impacting water quality or posing physical safety problems. BLM and its partners have identified methods and developed risk-based criteria to establish manageable priorities and resource requests. BLM will continue to work in priority watersheds to help foster improvements in water quality, and focus on populated and high-use areas first when remediating AML sites posing physical safety hazards. BLM will also conduct outreach and sponsor awareness activities about the potential dangers AML sites may pose.

Program success measures are in place. Management systems and business processes have been developed. Program policies are being consolidated into a manual and handbook. Our internet web page is being redesigned. Recognizing that more needs to be done, AML program personnel have come together to identify specific action steps that are needed to support their on-the-ground activities. This plan builds on successes and lessons learned to date, and provides a foundation for the AML program's future.

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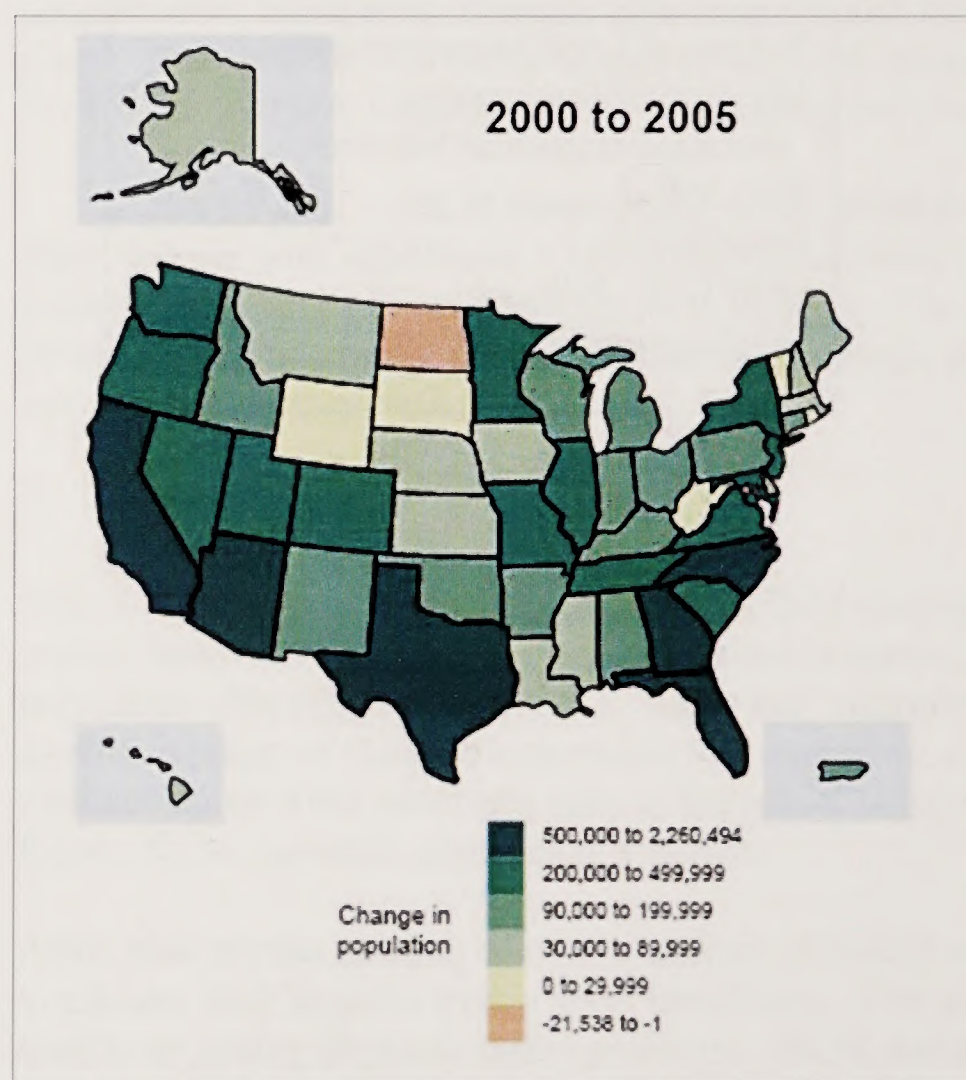
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Historic Mining in the West

Historic mines produced precious metals, base metals, and other mineral commodities (e.g., gold, silver, copper, lead, zinc, mercury, etc.) The mines shut down, became inactive, or were abandoned according to the conditions affecting mineral economics of the time. Many of the mines were operated as far back as the Civil War period, and transcended major gold and silver rushes that occurred throughout the West, including large-scale rushes in Alaska, California and Nevada. Extensive mining supported World War I and II strategic mineral needs. Many of the mines involve extensive underground workings. Mines also needed mills to crush the ore and smelters to produce the metals. Gold mining in Alaska involved placer techniques. Hydraulic mining in California resulted in stream siltation and potential erosion problems. Since these sites are old, most were not bonded or whatever bond may exist is insufficient to cover the remediation costs. The BLM conducts baseline searches to identify mining claimants and other persons who can assist in the remediation directly or in-kind. Where warranted, the BLM conducts more extensive searches for Potentially Responsible Parties who can be held liable for the costs. Few financially viable parties exist to share the costs.



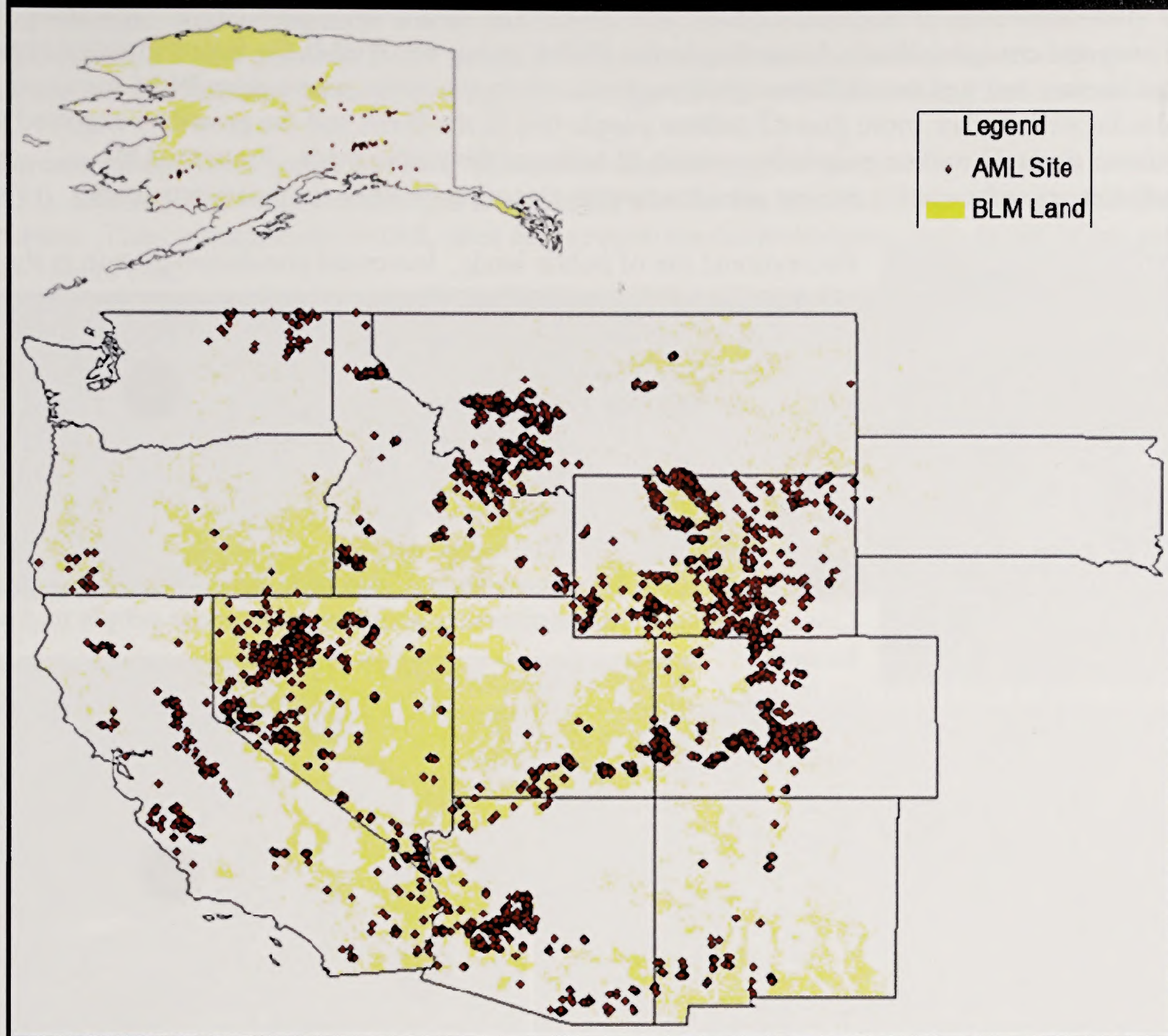
Inventory

The BLM does not have a complete inventory of AML sites. During the early 1990s, the BLM established an AML Task Force, which developed a comprehensive inventory strategy and issued data collection requirements. Field validations were funded through existing resources. The extent and quality of inventory data collected or validated varies among the States.

In 1996, the Task Force reported its progress to the Director and Assistant Secretary. The BLM estimated it had approximately 70,000 sites encompassing over 300,000 features on BLM-administered lands. No cost estimate was made. The Task Force made several recommendations: shift focus on beginning to address known sites; and

conduct more targeted future inventory work in priority areas. The recommendations were approved. By 2000, the inventory data was consolidated into a bureauwide database. BLM's AML inventory database had 11,000 sites and 40,000 features as of October 2005.

Known AML Sites



AML Impacts

Safety Hazards. Many abandoned mines may pose physical safety hazards and may cause environmental shafts and adits; unstable rock and decayed support structures; highwalls/open pits; contaminants; and confined space risks.

Environmental Hazards. Typical kinds of environmental problems stemming from AML sites include: contaminated/acidic surface and ground water; and stockpiled waste rock and mill tailing piles. Many affected watersheds are in arid climates in the West, where water is scarce, and the need to improve water quality for human and aquatic resources use is critical. Some western watersheds may be significantly impacted by widespread mercury contamination. In addition to abandoned mine sites, there are abandoned smelter sites where remaining tailings piles from past milling operations continue to impact the environment.

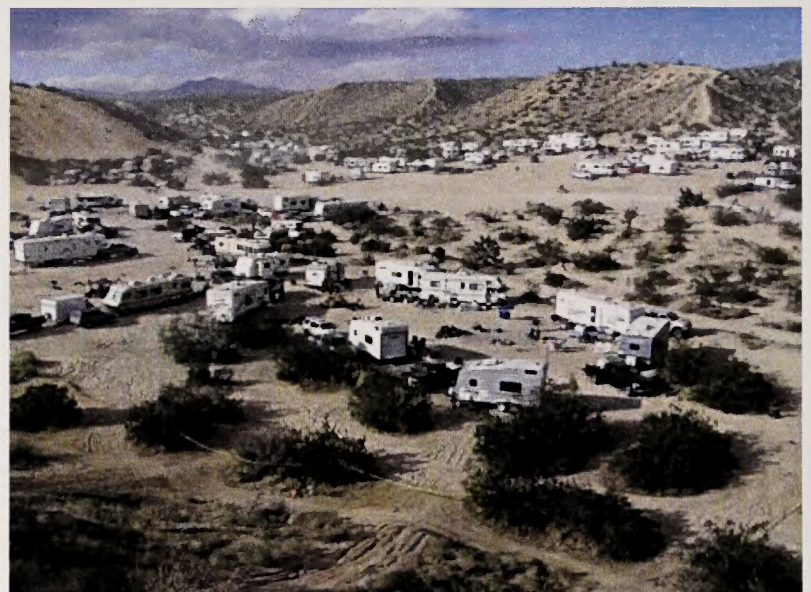
Addressing AML impacts is becoming increasingly important due to increased exposure to people and risks of accidents, injuries, and tort claims.

Increased Exposure

Growing and changing West. According to the 2000 Census, the West is the fastest growing region of the Nation, and 9 of the 12 fastest-growing States are in the West, where most BLM-managed land is located. Today, more than 63 million people live in the West, and the growth is expected to continue. Over 22 million people live within 25 miles of the public lands. From an AML standpoint, more heretofore remote sites are now in closer proximity to population centers.



Recreational use of public lands. Increased population growth in the West is also reflected in higher demand for outdoor recreation on public lands. Recreation areas, national by-ways, and campground facilities on public lands can be located in proximity to AML sites. Use of Off-Highway Vehicles often transpires at AML sites amid risks of dangerous shafts, and exposure to contaminants in the soil, water, and air. Recreational fishing can place anglers in proximity of AML sites, and is impacted by decreased fish population among polluted waters stemming from AML sites, and available fish may pose significant uptake of contaminants when consumed. Events such as Lewis and Clark Trail anniversary activities can expose people to AML hazards.



Budget Impacts

Compliance. Nearly all AML remediation activities must comply with relevant legal requirements including NEPA, CERCLA, CWA, NHPA, and ESA. Studies and documentation of proposed actions require resources.

Mixed-ownership. Many AML sites and impacts traverse property boundaries between private land owners and land management agencies. Moreover, water runoff can flow among adjacent in-holdings. Split estate complexities also necessitate coordination. Consequently, shared remediation can involve expenses associated with developing partnership agreements.

Water treatment. Water treatment can be prohibitively expensive, particularly if it involves active treatment methods.

Repositories. Addressing mine wastes and tailings may involve transport to environmentally safe repositories. Where possible, BLM and its partners construct and maintain joint repositories. Such shared remediation may necessitate longer-term responsibilities for monitoring and maintenance.

Threatened and Endangered Species. Threatened and endangered species may reside in or around AML affected lands and waters. This is especially true for bat species. Adits often provide bat habitat. Thus, remediation of AML sites may require special techniques, such as use of bat gates, at additional cost.



Cultural and Historical Preservation. Some old mining communities want to preserve old mine workings and equipment. The BLM must work with local communities when reclaiming AML sites to meet National Historic Preservation Act requirements and

desired restoration outcomes.

Monitoring and Maintenance. Virtually all reclaimed sites require continued monitoring and maintenance. Even signs and markers need to be replaced due to weathering or vandalism.

Environmental Liabilities. AML sites posing environmental problems can fall within the reporting requirements for Contingent Environmental Liabilities under the Chief Financial Officers Act. Additional field validation activities may be needed to gather and report current and accurate information about known AML sites.

AML National Level Evaluation Criteria

1. Water Quality Criteria Score: Up to 10 points for each criterion met.

State government priority. Under the watershed approach, the State government has identified the watershed or watershed segment as a high priority in the context of Unified Watershed Assessment Categories I and II, and the State Watershed Restoration Action Strategy.

Partnerships. The project reflects a collaborative effort (such as fund leveraging) with other land management agencies having an interest in a specific watershed or watershed segment.

Cost avoidance/cost recovery. A realistic potential exists for cost avoidance or cost recovery by having potentially responsible parties contribute to the remediation efforts.

Impairment of water quality standards. The AMLs are causing, contributing to, or could contribute to an impairment of one or more water quality standards (Federal, State, Tribal, or local).

Water quality violations. The AMLs are causing, contributing to, or could contribute to a violation of Federal or State water quality law or regulation.

Threat to public health or safety. The AMLs are causing, contributing to, or could contribute to a threat to public health or safety.

Threat to the environment. The AMLs are causing, contributing to, or could contribute to a threat to the environment. In some cases, the actual violation may be significantly downstream in a watershed, in which case only a hydrologic connection to the AML need be demonstrated in order to justify funding.

Continuing/expediting an existing on-the-ground project. The additional funding will contribute to or expedite completion of ongoing AML watershed remediation (as opposed to an inventory work in a new watershed).

Location. The AMLs to be addressed are documented in BLM's Abandoned Mine Land Inventory System and are located on BLM-managed lands (not privately owned lands or mixed-ownership sites).

Cost efficient. The mitigation or remediation actions to be funded can achieve results by applying low cost, low maintenance measures (as opposed to higher cost, active water treatment methods).

2. Physical Safety Hazard Criteria Score: Up to 20 points for each criterion met.

Death or injury has occurred. A death or injury is known to have occurred at the AML site and the site has not already been addressed.

Visitation/high use. The AML site is situated on or in immediate proximity to developed recreation sites and areas with high visitor use. Areas with High Visitor Use can include dry lake beds, sand dunes, high use roads, frequently used special event areas, open Off-Highway Vehicle (OHV)

areas. Other sites qualify if a formal risk assessment indicates a risk level of high or extremely high.

Accessibility. The AMLs are judged to be easily accessible. Examples could include those located on main visitation pathways and adjacent areas when there is reason to believe visitation is occurring or has occurred in the past.

Location. The AMLs to be addressed are documented in BLM’s Abandoned Mine Land Inventory System and are located on BLM-managed lands (not privately owned lands or mixed-ownership sites).

Cost efficient. The mitigation or remediation actions to be funded can achieve results by applying low cost, low maintenance measures.

BLM AML Partnerships (Non-Federal)

State Office	Partnership Organizations
Alaska	State of Alaska - Department of Natural Resources; University of Alaska – Fairbanks; Yukon River Inter-Tribal Watershed Council; Yukon Territory - Division of Indian and Northern Development
Arizona	State of Arizona - Departments of: Environmental Quality; Land; Water Resources; and Office of Mine Inspector; Bat Conservation International
California	State of California - Department of Environmental Conservation; California Water Resources Board; Delta Tributary Mining Council; Friends of Deer Creek Group; Nevada County - Resource Conservation District; Placer County - Resource Conservation District; Putah Creek Watershed Group; Sierra-Trinity Abandoned Mine Lands Agency Group
Colorado	Animas River Stakeholders Group; ASARCO; State of Colorado - Departments of: Natural Resources; Public Health and Environment; Colorado Mining College; Colorado School of Mines; Duke Energy; Friends of the Animas Hinsdale County; Lake County Lake Fork Watershed Group; Lake Fork Watershed Working Group; National Geographic Society; San Juan Citizens Alliance; San Juan County; San Juan County Historical Society; San Juan; Resource Conservation District; Silver Wing Mining; Sunnyside Gold Company; Trout Unlimited; University of Oregon; University of Utah
Idaho	Butte County; City of Coeur d'Alene; Coeur d'Alene Basin Commission; State of Idaho - Departments of Lands; Environmental Quality; Fish and Game; Geological Survey; Historic Preservation Office; Idaho Mining Association; Shoshone County; University of Idaho
Montana & South Dakota	Apollo Gold; Deadwood Historical Preservation Society; Fort Belknap Indians; Granite County Commissioner; Homestake Mining; State of Montana - Bureau of Mines and Geology; Departments of Environmental Quality; Fish, Wildlife & Parks; Montana State University-Reclamation Research Unit; State of South Dakota - Departments of Environment and Natural Resources; South Dakota School of Mines and Technology; Stillwater Mining; Trout Unlimited; University of Montana
New Mexico	City of Silver City; State of New Mexico Department of Minerals, Energy and Natural Resources; WERC-New Mexico State University
Oregon & Washington	State of Oregon - Departments of: Environmental Quality; Geology and Mineral Industries; State of Washington - Departments of: Ecology; Natural Resources
Utah	State of Colorado Department of Natural Resources; State of Utah Departments of Environmental Quality; Natural Resources
Wyoming	State of Wyoming Department of Environmental Quality

State Office Multi-Year AML Work Plans

Alaska State Office

Abandoned Mine Land Workplan

Period: FY2007 – FY2013

Summary

BLM Alaska currently has a limited inventory of abandoned hardrock mines on public lands that require remediation. The current inventory includes only mines that require no remediation, that are already remediated, or that are in the process of remediation. To date, 14 water quality projects/sites, 9 physical safety hazard sites, and 7 water quality/physical safety hazard sites have been remediated. To be clear, this should not be construed to mean that there are no abandoned mines that need to be remediated. It simply means that we do not have a complete inventory.

The chart below shows the status of the AML Program in Alaska from FY1999 through FY2007.

HUC and Watershed	Primary Issues *	Name of Project	FY Start	FY End
HUC 19020102 Middle Copper River	BH, HP, JK, MG	Simpson & Brennan	1999	2003
	BH, JK, MG	Fourth of July Creek	2002	2003
	BH	Boulder Creek	2002	N/A
HUC 19020501 Upper Susitna River	BH, HP, JK, MG	Maclaren River	1999	2007
HUC 19040104 Fortymile River	BH, JK, MG	AK Yukon Fortymile River	2002	2006
	HP, MG	Glenn Couch Staging Area	2003	2003
	HP	Wade Creek/Taylor Hwy.	2003	2003
	HP	Wade Creek Dredge	2006	2006
HUC 19040402 Birch-Beaver Creeks	BH, JK, MG	98 Mile Steese/Birch Creek	1999	2006
	JK, MG	Quartz Creek Trail	2002	2007
	BH, JK	Harrison Creek Restoration	2002	2007
	BH	Steese Area Assessment:	2002	2003
	JK	1. Great Unknown Creek	2004	2005
	JK	2. Great Unknown Creek	2004	2005
	JK	3. Ptarmigan Gulch	2004	2004
	JK	4. Squaw Creek	2004	2004
	JK	Interagency Birch Creek	2003	2007
HUC 19040404 Ramparts	BH, JK	Hunter Creek	2003	2007
	HP, MG	Hoosier Creek	1999	2003
HUC 19040506 Chena River	BH, JK	HIYU Minesite	1999	2003
HUC 19040509 Tolovana River	BH, HP, JK, MG	Hope Creek	2002	2004
HUC 19040602 South Fork Koyukuk River	BH, HP, JK, MG	Gold Bench	1999	2002
	BH, HP, JK, MG	Iron Side Bar	1999	2002
HUC 19050103 Norton Bay	BH, HP, JK, MG	Tubutilik River	1999	2003

* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring

AML Watershed Projects

There are an unknown number of abandoned mines on public lands in Alaska that have possible impacts on water quality in priority water sheds. These impacts usually include drums containing used petroleum and unknown substances, erosion, turbidity, leaking tanks, vehicles, and/or batteries. The highest priority watersheds impacted by abandoned mines are most likely the Birch-Beaver Creek, Fortymile River, and the Kuskokwim River. Work is underway in 2 of these watersheds.

AML Physical Safety Sites

There are also an unknown number of high-risk mine openings on BLM managed lands in Alaska, and it is suspected that many of these sites may be within the jurisdiction of the Fairbanks District Office. The most significant type of mine hazard is old junk left behind that attracts attention of hikers and hunters.

AML Inventory Projects

In FY2006, a new inventory strategy will be designed which will include the possible negotiation of a second assistance agreement with the Yukon River Inter Tribal Watershed Council. The council has shown an interest in studying the Kuskowkwim River watershed as they did in the Alaska Yukon Fortymile River Transboundary area. Additional inventory activities should resume in the Birch-Beaver Creek and Fortymile River watersheds.

Table 1. Workload Targets

Workload Targets								
PE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
BH	0	0	0	0	0	0	0	0
HP	0	0	0	0	0	0	0	0
JK	12	0	0	20	5	0	5	32
NP	5	0	1	0	1	0	1	8
NQ	1	0	0	0	1	0	0	2

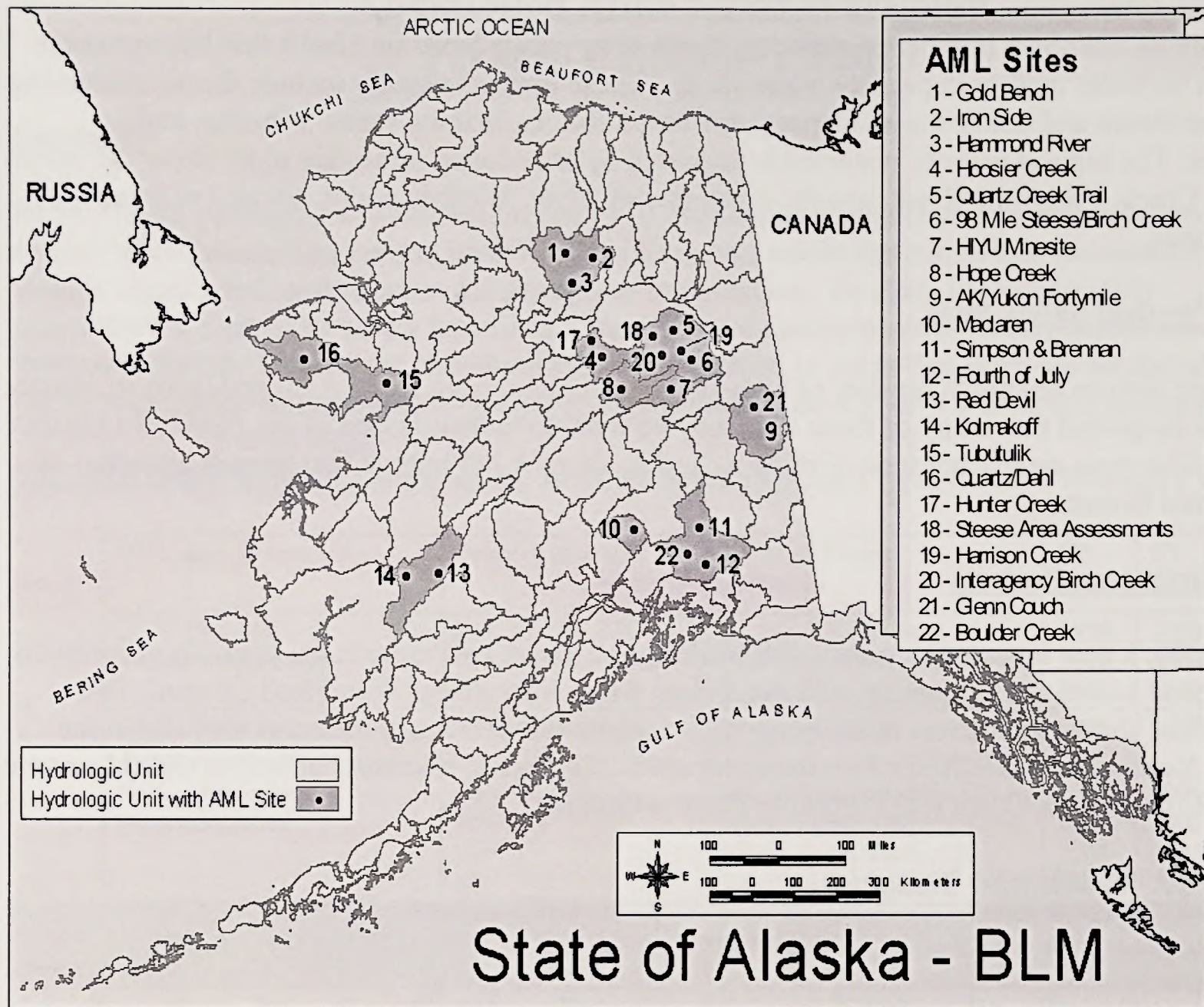
* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring, NP=Evaluate Cost Avoidance/Cost Recovery, NQ=Process Hazmat Cost Avoidance/Cost Recovery Cases

For specific details on planned, ongoing and completed projects, go to the BLM Alaska AML web site at <http://www.ak.blm.gov/ak940/aml/amlindex.html>

Key AML Contacts

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Alaska AMLs and Priority Watersheds FY1999-FY2007



Arizona State Office
Abandoned Mine Land Work Plan
Period: FY2007 – FY2013

Summary

Significant mining areas in Arizona are:

- Southeastern - Eastern Arizona – Porphyry and vein deposits (copper, silver, molybdenum, gold, tungsten, lead, zinc)
- Central Arizona - Vein and massive sulfide deposits (copper, lead, silver, gold, manganese, tungsten, mercury)
- West-central Arizona – Vein deposits (gold, silver, copper, lead, zinc, manganese, uranium, tungsten)
- Southwestern Arizona – Placer and vein deposits (gold, silver, manganese)
- Northern Arizona – Breccia pipes and stratabound deposits (uranium, vanadium, manganese, copper)

Significant and widespread mining, both on- and off-site beneficiation, and smelting have occurred in Arizona's mining districts since the 1860s. Many of the lands originally mined were patented; however, abandoned mine sites commonly occur on public land near all of the historic mining districts. Numerous industrial mineral sites also occur in Arizona, but these typically are small and pose little risk to people or natural resources.

Arizona currently has an inventory of 1,953 known abandoned hardrock mines on BLM-administered public lands. This inventory includes 38 mines that may impact water resources, and 961 sites that likely pose significant physical safety hazards. Arizona's inventory covers the entire state; however, it currently is a patchwork from data from the U.S. Bureau of Mines MILS system (least accurate), data collected for the Arizona BLM via an assistance agreement with the Office of the Arizona State Mine Inspector (1992 - 1998, moderate accuracy), and from our own field data (most accurate). Only about 20% of BLM administered public lands in Arizona have been covered with moderate accuracy (or better) surveys.

Our inventory efforts in the 1990s were focused near major population centers (Phoenix, Tucson, Kingman, Wickenburg, and Lake Havasu City); so, several million acres of BLM-administered lands in Arizona have not been recently inventoried. Additional AML inventory work is planned which will focus on areas near recreation and high use sites. Arizona intends to expand our inventory through other program work as well. We intend that AML data will be collected as we move forward in our evaluation of rangeland health and monitoring in other resource programs (e.g., range, soil-water-air, riparian, wilderness, National Lands Conservation System (NLCS; monuments), recreation etc.). Our work plan also includes verification of historic inventory data records and close effective management of prospective data.

According to available records, 6 water quality projects and 74 sites with significant physical safety hazards have been remediated since FY1999. However, Arizona began actively cleaning up and closing sites in 1985 with the voluntary help of mining claimants. Additionally, numerous sites

were remediated during the 1990s in concert with the Office of the Arizona State Mine Inspector. As we analyze and verify our data records, we expect to find historic records for dozens of sites that were closed or cleaned up during the 1980s and 1990s. AZ will compile and maintain these historic records as part of our work plan.

BLM Arizona will make every effort to establish partnerships with other stakeholders and foster community and outside agency participation in the remediation of AML hazard sites. We intend to continue a partnership with the Office of the State Mine Inspector and with Bat Conservation International and further develop partnerships with the AZ Department of Environmental Quality, the AZ State Land Department, the AZ Department Water Resources, and multiagency-multipartner watershed groups which have begun work in several areas in the state to improve key watersheds (e.g. Upper Gila and Aqua Fria watersheds).

We've redirected position duties in the AML and hazmat programs in Arizona to be able to respond to AML and hazmat issues and develop necessary partnerships. We've resurrected a state AML team with assigned points of contact for the AML program in each of our 7 Field Offices, and we've assigned first responders for hazmat in each office. Hazmat and AML programs have been braided because many of the AML issues involve hazmat issues and many of the hazmat sites in Arizona are mining related. Additionally, we've transferred the on-the-ground zone duties of the state hazmat / AML program lead to a new zone hazmat-AML position in our Phoenix District. These changes will allow us to accomplish more on-the-ground projects, improve our responsiveness to sensitive issues, and allow us to catch up on lagging strategy and policy development. Most importantly, these changes will allow us to foster new partnerships which will eventually lead to improved public health and safety.

AML Watershed Projects

In Arizona, all the watersheds flow eventually to the lower Colorado River. Virtually all of the municipal and Native American Reservation water systems are fed by free-flowing surface waters or by ground water from recharge areas within the lower Colorado River basin. The arid climate and proximity to the California and Mexico borders heightens the sensitivity of any water related issues, and the weather patterns often create flash flood (flushing) conditions. Consequently, the entire lower Colorado is closely scrutinized by the public, and all the AML sites occur in tributaries to the lower Colorado.

Arizona has consistently identified in the riparian and soil-water-air programs 4 watersheds as our highest priority natural resource watersheds. They are, in priority order, the Upper San Pedro, the Middle and Upper Gila, the Aqua Fria, and the Bill Williams. This priority order was developed in concert with other natural resource agencies and watershed groups. However, additional watersheds with AML sites flow near or through major population centers, encompass the recharge area for groundwater supplies for metropolitan areas, and drain directly into the lower Colorado River. An abandoned mine multiagency-multipartner working group, comparable to the natural resource working groups, has not been convened in Arizona to reach consensus on the highest priority watersheds for protecting public health and safety. Consequently, for this strategy, we identify watersheds and sites in those watersheds that obviously pose the highest risk to public health and safety. Watersheds with sensitive natural resources currently are considered lesser priority than those that pose an immediate risk to people.

Arizona has not yet developed detailed guidance for assessment criteria for prioritization of watersheds, although this was identified in February 1995 as a high priority goal in the Strategic Plan for the Arizona Minerals Program. Development of this guidance is a high priority for FY2006 as an outgrowth of this work plan. Currently in Arizona, the priority of watersheds, and the priority of sites within high priority watersheds, has been based on level of risk of the threat to public health and safety because of proximity and direct flow to, or influence on, human populated areas. Sites with risk to other natural resources have been considered lower priority. As an outgrowth of this work plan, we intend to develop detailed assessment criteria that will score and categorize sites and watersheds. It will include both quantitative and qualitative risk factors for both people and natural resources.

Based on the best, currently available information and for purposes of this strategy, the 6 highest priority watersheds impacted by AML sites on public lands are, in priority order, the Hassayampa, Upper San Pedro, Tyson Wash, Sacramento Wash, Hualapai Wash, and Imperial Reservoir watersheds. All but the Hassayampa and the Upper San Pedro priority watersheds flow directly to the sensitive lower Colorado River. However, the Hassayampa provides water and ground water to the Phoenix basin. The Upper San Pedro supplies water to the Sierra Vista subwatershed with both human and natural resource issues. Also, the Upper San Pedro also is the subject of special Congressional legislation and monitoring. Additionally, 1 project is currently underway in the middle Gila for the benefit of downstream users, including Native American tribes.

There are 19 abandoned mine sites on public lands in Arizona that have impacts on water quality in the 6 high priority watersheds. Table 1 contains a list of planned project areas associated with these 19 mine sites. The impacts include acidic metal laden drainage from mine openings, tailings and waste rock dumps, and mine wastes in stream channels or washes.

As we expand and clean up our inventory, examine and develop our assessment methods, and embrace input from partners, our priority list undoubtedly will expand and have to be adjusted.

Table 1.

Priority Watershed Projects							
WATERSHED	PROJECTS FUNDED/ PLANNED	# AMM Sites	FY START	FY FINISH	EST TOTAL COST	EST BLM PORTION	KEY PARTNERS
1. Upper San Pedro	San Pedro Mill Sites	4	05	08	\$400,000	\$400,000	*None
2. Upper San Pedro	Charleston Lead Mine	1	09	09	\$200,000	\$200,000	None
3. Hassayampa	Wickenburg Millsite	1	07	09	\$3,330,000	\$3,330,000	None
4. Hassayampa	Octave Tailings	1	10	12	\$240,000	\$240,000	None
5. Sacramento Wash	Mohave Hope Mine & Millsite Antler Mine & Millsite	5	07	09	\$500,000	\$500,000	None
6. Hualapai Wash	American Legion Mine C.O.D. Mine &	5	07	09	\$500,000	\$500,000	None

	Millsite						
7. Tyson Wash	Moon Mountain Millsite	1	07	07	\$500,000	\$500,000	None
8. Imperial Reservoir	Red Cloud Mine Tailings	1	08	09	\$500,000	\$500,000	None

* We routinely coordinate AML work with the Office of the Arizona State Mine Inspector; however, it is not listed here because it is not currently contributing funding or in-kind funding in the project areas.

AML Physical Safety Sites

Over 150 high-risk mine openings have been identified on BLM managed lands in Arizona. The majority of these features are within the jurisdiction of 4 of our Field Offices. The most significant types of mine hazard features are open shafts, adits, and stopes, such as those near the La Posa Long Term Visitor Area (LTVA), and the Indian Kitchen and Swansea recreation areas. These areas typically have high use for backcountry touring and off highway vehicle (OHV) activities, rock hounding, and recreational mineral collection by winter visitors, or are located near populated areas. Several of the sites afford habitat for wildlife. Approximately \$1,700,000 will be required to remediate these types of mine hazards at the known sites.

Remediation at key sites is guided by focused inventory assessments starting with those sites that are clustered in proximity to sites with high public exposure. Additional inventory work is planned (see Table 3 for workload targets) for areas not included in the existing inventory.

Table 2.

Priority Physical Safety Hazard Sites					
RECREATION AND HIGH USE AREAS	# OF AMM SITES	FY START	FY FINISH	EST BLM COST	KEY PARTNERS
1. Snyder Hill	12	07	07	\$25,000	*None
2. Indian Kitchen	24	08	09	\$40,000	None
3. Bronkow	15	10	11	\$15,000	None
4. Tombstone	1	10	10	\$5,000	None
5. Saddle Mountain	6	07	09	\$30,000	None
6. Vulture Mountain Race Course	2	08	08	\$10,000	None
7. Harquahala Summit	1	09	09	\$8,000	None
8. Hells Canyon Wilderness	1	10	10	\$5,000	None
9. Union Pass	3	07	09	\$25,000	None

10. Hualapai Mountains	5	07	09	\$40,000	None
11. N. Black Mountains	4	07	09	\$100,000	None
12. Garnet Mountain	6	07	09	\$60,000	None
13. Oatman	5	07	09	\$40,000	None
14. Swansea	28	07	08	\$110,000	Arizona SHIPO, Site Stewards, BCI, AZG&F
15. Laguna Mountains	3	07	07	\$200,000	None
16. Red Cloud Mine area	6	09	10	\$80,000	None
17. La Posa LTVA	17	09	10	\$200,000	None
18. Dome Rock	13	07	07	\$155,000	None
19. Dripping Springs	11	08	09	\$260,000	None
20. Picacho Hills	7	08	08	\$200,000	None
21. Mohawk Mountains	4	08	08	\$80,000	None
22. Islander Mine	2	07	07	\$20,000	BCI, CAF&G, CA Division of Mines
23. Pilot Rock and Standard Wash	4	07	07	\$50,000	AZG&F

* We routinely coordinate with the Office of the State Mine Inspector for all actions; however, it is not listed here unless it contributes funding or in-kind funding.

Table 3.

Workload Targets								
PE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
BH	91	28	25	25	25	25	25	244
HP	44	41	45	18	8	8	7	171
JK	12	23	77	3	0	1	0	116
NP	2	1	2	1	0	0	0	6
NQ	2	1	4	0	0	2	0	9

* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring, NP=Evaluate Cost Avoidance/Cost Recovery, NQ=Process Hazmat Cost Avoidance/Cost Recovery Cases

For specific details on planned, ongoing and completed projects, go to the BLM Arizona AML web site at <http://www.blm.gov/az/mines/mines.htm>.

Arizona's ability to accomplish this workload will be based on level of funding. We believe we have made significant progress in the last year in establishing both AML and hazmat teams that are poised to accomplish the work, in raising the awareness internally and externally of the importance of the AML program to public health and safety, and in garnering BLM management support to move forward with this strategy.

Key AML Contacts

Al Burch or Hazmat / AML program lead (now being hired)

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Arizona Strip Field Office - Rody Cox

Kingman Field Office - Paul Misiaszek

Colorado River District - Christine Bates, Cathy Wolff-White

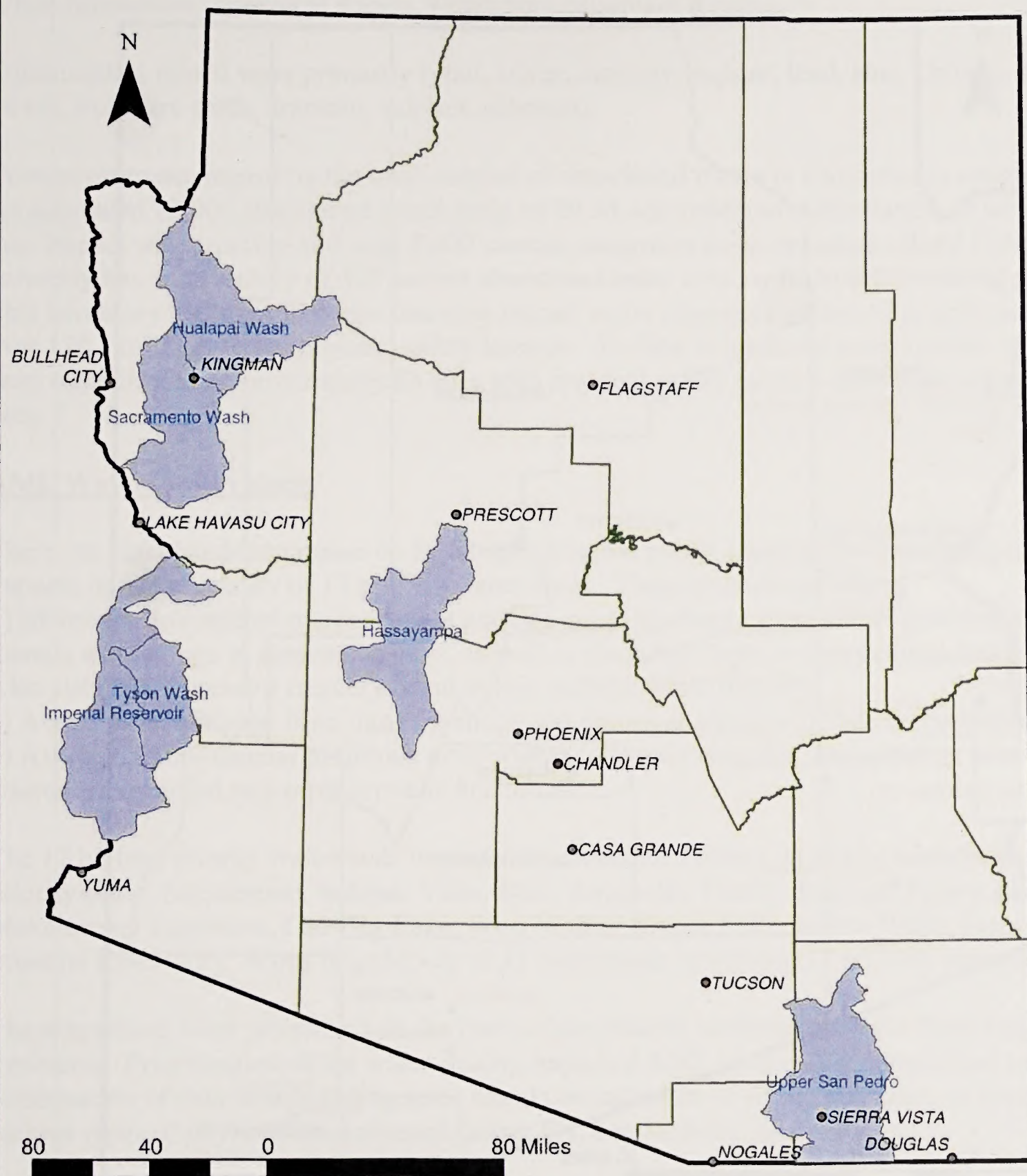
Yuma Field Office - Stephen Fusilier, Gary Rowell

Phoenix District - Matt Plis, also new Hazmat / AML position now being hired

Tucson Field Office - Bill Auby

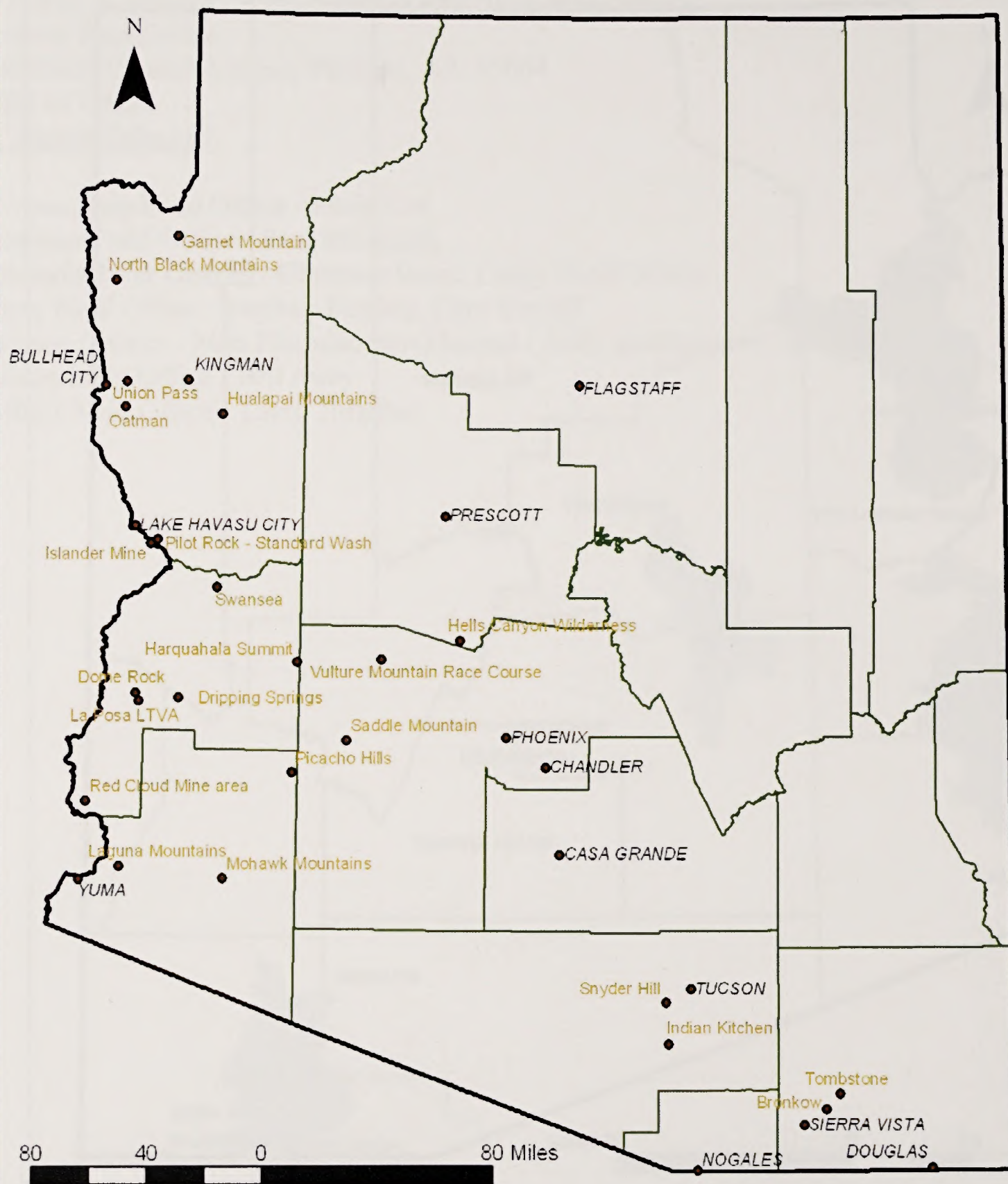
Safford Field Office - Larry Thrasher

BLM AZ - Abandoned Mine Lands Program FY2007 - FY2013



Priority Watersheds

BLM AZ - Abandoned Mine Lands Program FY2007 - FY2013



Priority Recreation & High Use Sites

California State Office
Abandoned Mine Land Workplan
Period: FY2006 – FY2013

Summary

Significant mining areas in California are: Sierra Nevada Mountains, Klamath Mountains, Foothill Copper-Lead-Zinc Belt, Coast Range Province, Mojave Desert Region, Colorado River Belt, Inyo-White Mountains, Transverse Range, Tehachapi Mountain Region.

Commodities mined were primarily (gold, silver, mercury, copper, lead, zinc, chrome, antimony, nickel, iron, rare earth, uranium, sulphur, asbestos)

Current estimates regarding the total number of abandoned mines in California is roughly 50,000. An estimated 13,000 abandoned mines exist on BLM-administered public lands, of which 1,000 may impact water quality and over 3,000 contain hazardous mine openings. BLM California currently has an inventory of 520 known abandoned mine sites on BLM-administered public lands. This inventory includes 60 mines that may impact water resources within 17 priority watersheds; over 120 sites likely pose physical safety hazards. To date, 8 impaired water quality sites have been remediated. Approximately 88 sites with physical safety hazards have been remediated, to date.

AML Watershed Projects

There are 520 abandoned mines on BLM-administered public lands in California that have possible impacts on water quality of 17 priority water sheds. These impacts include:

- 1) Elemental and methyl mercury point and non-point discharge from placer gold mine sluice tunnels and tailings in stream channels, as well as discharge from mercury mines and millsites. Also airborne sources of mercury occur at mill tailings waste deposits.
- 2) Acidic mine drainage from mine openings and dumps at massive sulfide orebody-type mines.
- 3) Asbestos mines discharge fibrous mine wastes in stream channels, and airborne erosion of mine wastes are regarded as a serious public health risk.

The 17 highest priority watersheds impacted by abandoned mines on public lands include, in priority order, Sacramento, Salinas, Yuba, Bear, American, Trinity, Russian, Pajaro, Cosumnes, Mokelumne, Tuolumne, Crowley Lake, West Walker, Goose Lake, Indian Wells, Ivanpah Valley, Imperial Reservoir). Work is underway in 11 watersheds, involving 17 priority watershed projects.

The watersheds were prioritized on the basis of assessment undertaken by the State Dept of Water Resources. Prioritization of the water-quality impacted AML sites was accomplished using a combination of data sets including toxic metal concentration in water, sediment, or biota and various types of physical measurement (water PH, conductivity, alkalinity, etc.).

Impaired California watersheds were identified and prioritized by State Dept of Water Resources on the basis of 303(d) impairment listing under the Clean Water Act, and subsequent TMDL program implementation. In addition, BLM AML projects within a given watershed (e.g. Bear-Yuba watershed) were ranked on the basis of estimated contaminant loading and discharge, CWA *point-source* and *non-point source* discharge identification, as well as bioaccumulation, and human health and risk factors.

State Water Board, State AML Unit, Forest Service AML Program, and other agency representatives meet annually to discuss, collaborate, and rank AML water quality sites in priority watersheds. In addition, several public AML workshop events were hosted by the federal, state and local agencies in the Bear-Yuba watersheds during 2000-2003 and the Putah Creek watershed in 2005.

The state-wide distribution of abandoned mines on public lands, shown in relationship to priority watersheds is depicted in Table 1. California watershed maps are shown in Figure 1 and can also be viewed at (<http://www.ca.blm.gov/.htm>). Table 2 shows the key watershed partnerships developed by BLM California over a 7-year period.

The 8 highest priority watersheds impacted by abandoned mines on public lands include, in priority order: Sacramento, American, Bear, Nacimiento, Salinas, Trinity, Yuba, and Russian River watersheds. AML remediation work is either underway or proposed for all 8 of these watersheds (Table 1), involving 8 priority water quality projects.

Table 1. Priority Watershed Projects

WATERSHED	PROJECTS FUNDED/ PLANNED	BPS #	FY START	FY FINISH	COST
1. Cuddeback Basin	Kelly Mine		FY 06	FY 10	\$12,000,000
2. Sacramento River	Rathburn - Petray	35360	FY 06	FY 10	\$2,900,000
3. Bear River	Poore Hyd Mine	16870	FY 05	FY 11	\$1,200,000
4. American River	Pond Hyd Mine	33202	FY 05	FY 11	\$3,000,000
4. Mokelumne River	Poison Lake Mine		FY 06	FY 11	\$6,000,000
5. American River	Gold Run Mine	30571	FY 04	FY 11	\$3,500,000
6. Nacimiento River	Buena Vista Hg Mine	23074	FY 06	FY 11	\$1,200,000
7. Sacramento River	Oat Hill Ext Mine	28569	FY 04	FY 11	\$930,000
8. Russian River	Contact Mine	23833	FY 04	FY 12	\$650,000
9. Russian River	Sonoma Mine	23833	FY 04	FY 13	\$850,000
10. Yuba River	Davis Mine	23833	FY 04	FY 09	\$960,000
11. Salinas River	Rinconada Mine	16700	FY 04	FY 08	\$850,000
				TOTAL	\$32,4000,000

Table 2.

Watershed	Projects	Partnerships	
		Watershed Stakeholder Groups	Partnership role
Bear	Poore Mine	USGS, USACE	Technical
	Boston Mine	CRWQCB (Nevada County Resource Conservation District) Bear River CRMP	Expertise Monitoring Community Support Characterization
American	Pond Mine	USGS	Technical
	Gold Run Mine	CRWQCB-Sac Valley Region (Nevada County Resource Conservation District) American River Conservancy	Expertise Monitoring Community Support Characterization
Yuba	Davis Mine	USGS	Technical
		CRWQCB-Sac Valley Region Friends of Deer Creek (Nevada County Resource Conservation District)	Expertise Monitoring Community Support Characterization
Salinas	Buena Vista	USGS	Technical
	Rinconada	CRWQCB-Sac Valley Region (Nevada County Resource Conservation District)	Expertise Monitoring Characterization
Sacramento (Cache Creek)	PetreyRathburn	USGS	Technical
		CRWQCB-Sac Valley Region (Cache Creek CRMP)	Expertise Monitoring Characterization
Trinity	Hocker Flat	USGS	Technical
		CRWQCB-North Coast Region (BOR-Trinity River Restoration Program)	Expertise Monitoring Characterization

Physical Safety Hazards

Over 120 high-risk mine openings have been identified on BLM managed lands in California. The majority of these sites are within the jurisdiction of 6 BLM field offices. The most significant type of mine hazard feature is open shafts and adits remaining at AML sites in the Rademacher Hills, Spangler Hills, Alabama Hills, Keysville - High Use Recreation Areas). These areas have high use for OHV recreational uses). Approximately \$800,000 will be required to remediate this type of mine hazard.

Remediation at key sites is guided by focused inventory assessments starting with those site clusters in closest proximity to sites with high public exposure. Table 3 shows key physical hazard areas within designated recreation site areas. These areas are also depicted on Figure 2.

Table 3.

Physical Safety Hazard Sites				
Recreation Areas	Field Office	Number of Sites	Fiscal Year	Cost
Kelly Mine Red Mt. Town Area	Ridgecrest	200 +	FY06-7	\$200,000
Rademacher Hills OHV Area	Ridgecrest	400 +	FY06-13	\$400,000
Spangler Hills OHV Area	Ridgecrest	200 +	FY06-13	\$200,000
Randsburg High Use Area	Ridgecrest	100 +	FY06-13	\$100,000
Keysville Recreation Area	Bakersfield	40 +	FY06-13	\$40,000
(Coarsegold) High Use Area	Bakersfield	5 +	FY06	\$20,000
Alabama Hills Recreation Area	Bishop	40 +	FY06-13	\$50,000
Turtle Mts. Wilderness Area	Needles	20 +	FY06-13	\$10,000
El Mirage Recreation Area	Barstow	30 +	FY06-13	\$30,000
TOTAL				

Table 3. Workload Targets

PE	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
JK	40	570	400	85	70	160	90	90
BH	6	6	6	4	6	6	5	6
HP	5	15	25	30	40	45	50	50
NP	11	6	6	4	6	6	5	6
NQ	4	6	6	4	6	6	5	6

* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring, NP=Evaluate Cost Avoidance/Cost Recovery, NQ=Process Hazmat Cost Avoidance/Cost Recovery Cases

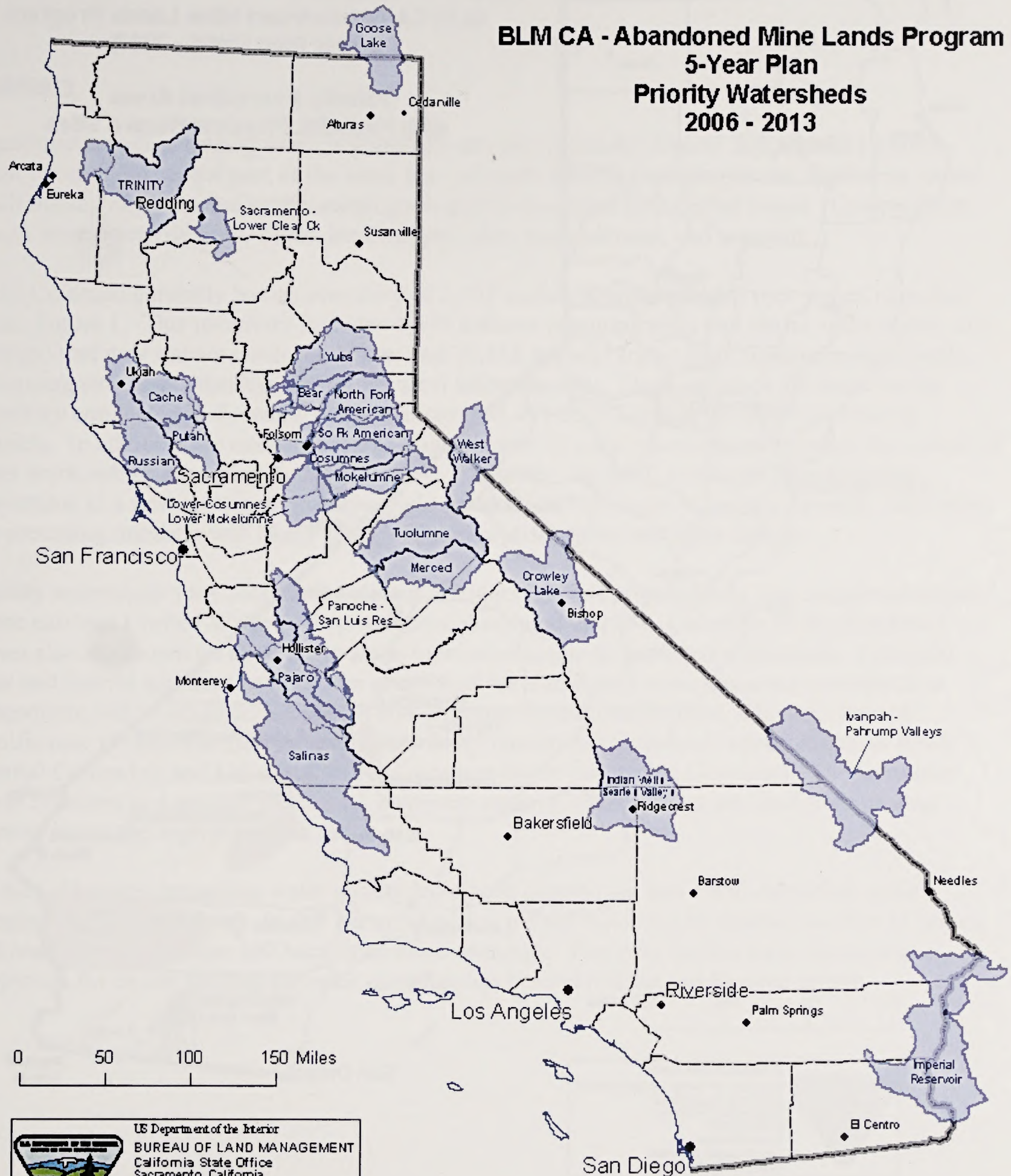
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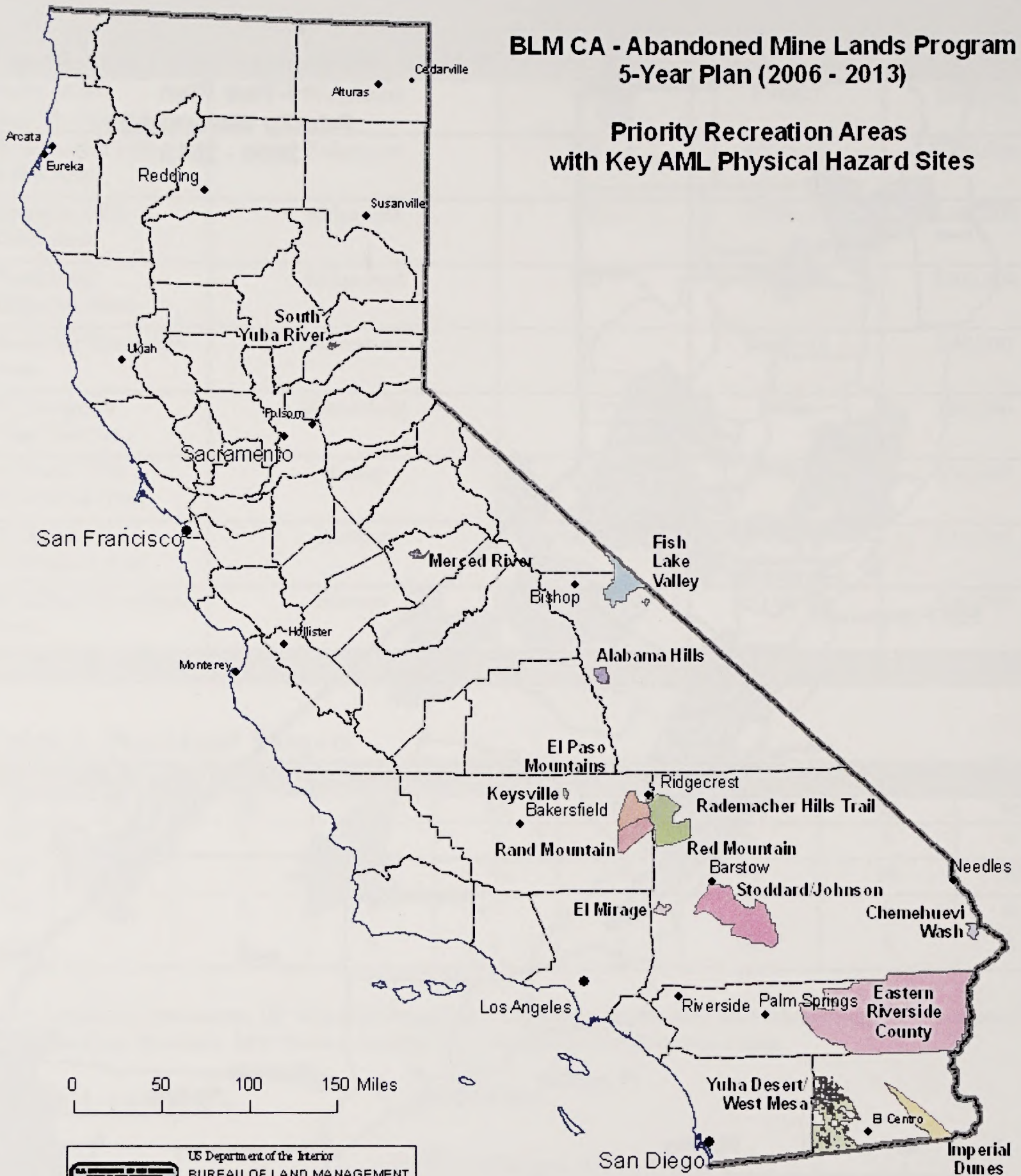
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**BLM CA - Abandoned Mine Lands Program
5-Year Plan
Priority Watersheds
2006 - 2013**



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California State Office
Sacramento, California
(916) 978-4400
www.ca.blm.gov
Date Prepared: 7/15/2005
Project: ca5yrplan.mxd



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Colorado State Office
Abandoned Mine Land Workplan
Period: FY2007 – FY2013

Summary

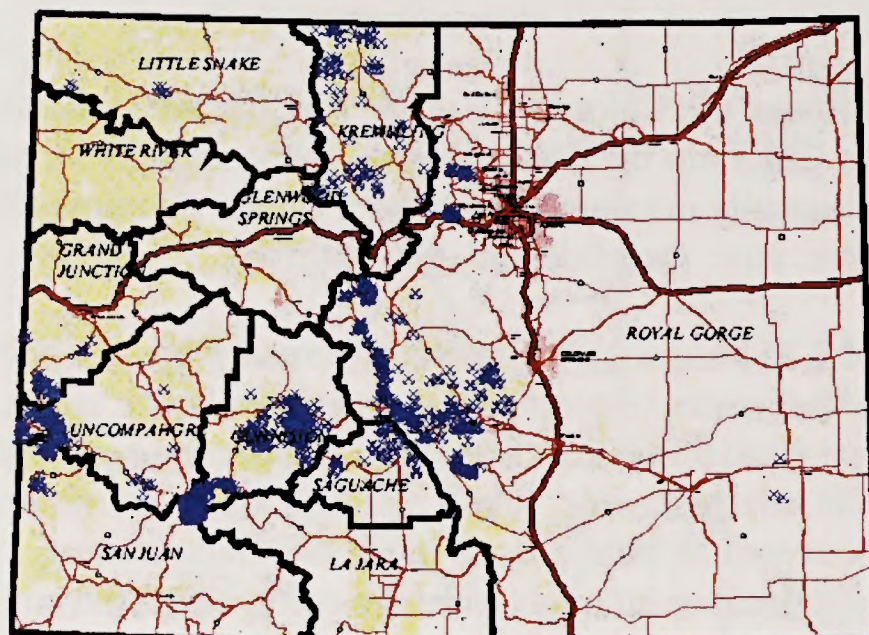
Significant non-coal mining areas in Colorado are: the Colorado Mineral Belt (metals) a north-south trend in the central part of the state, the Colorado Plateau (uranium) in the southwest, other small mining districts, and single mines geologically unrelated to the other mines. Commodities mined were primarily gold, silver, lead, copper, zinc, molybdenum, and uranium.

BLM Colorado currently has an inventory of 2,751 known abandoned hard rock mines on public lands, Figure 1. This inventory includes 4,670 features (draining adits and shafts, mine waste, mill tailings) that may impact water resources; and 10,818 features (open adits and shafts, high walls, collapsing structures) that likely pose physical safety hazards. These numbers are based on an inventory conducted in the early 1990s that covered all public lands in the Colorado mining districts. In addition, we encounter on average another 30 mine openings each year in the course of other work, which are added to the inventory. Currently, the AML inventory is undergoing conversion to a new system and another field check of the inventory is being proposed. Therefore the preceding numbers will likely change from new discoveries and field checks.

Priority watersheds for Colorado are shown in Figure 2. This prioritization was completed as part of the national Unified Watershed Assessment completed in 2004. Colorado BLM abandoned mines also are shown on this map to show their relationship to impacted watersheds. Colorado state and federal agencies have further prioritized the abandoned mine impacted watersheds to concentrate and leverage our resources and leverage for maximum effect. The priorities of significance for BLM are the upper Animas River (southwest Colorado), upper Arkansas River (central Colorado), and Lake Fork of the Gunnison River (southwest Colorado). The Gunnison River is shown as a pristine watershed; however, some of its tributaries are dead from mining impacts hence the high priority.

To date, 78 mines impacting water quality have been cleaned up, and 1,456 hazardous mine openings have been closed. In this planning period we are expecting to cleanup another 35 mines, and hopefully close some 560 hazardous mine openings. This may be an overly optimistic projection for as our funding for mine openings has been shrinking and become erratic.

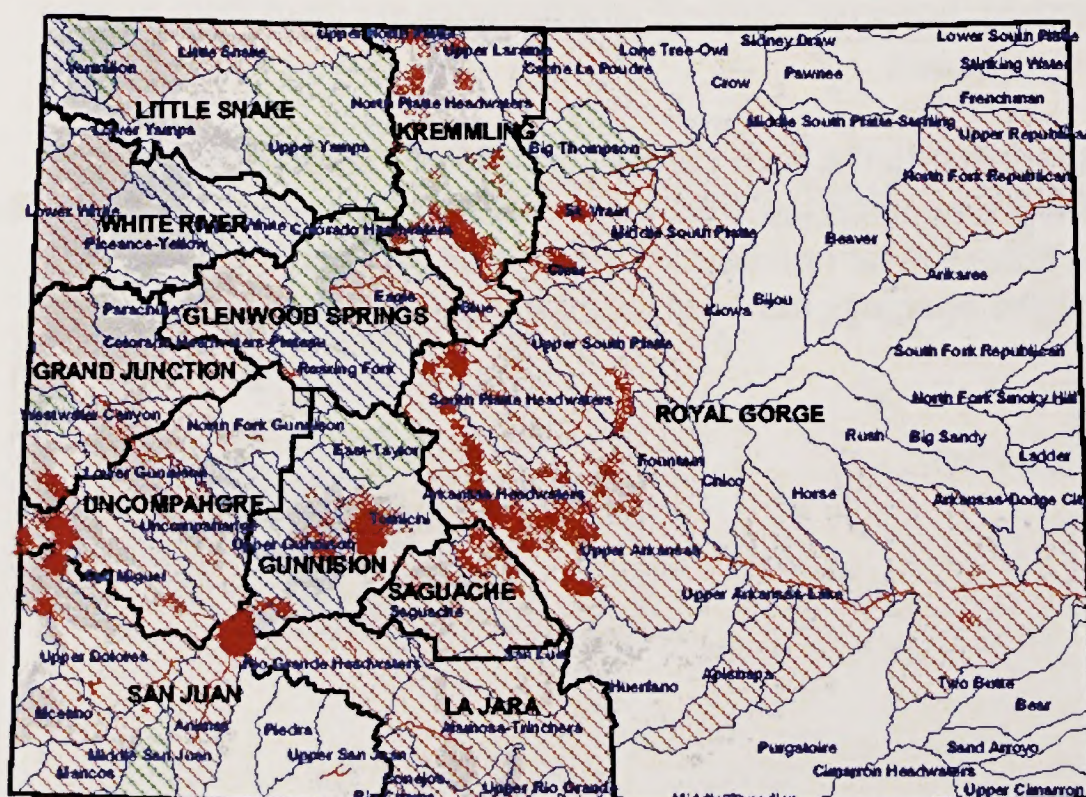
Fig. 1 COLORADO BLM ABANDONED MINES



Legend

- ✕ Abandoned Mines
- ▭ Resource Area
- Public Lands
- Roads
 - Collector
 - Interstate

Fig. 2 Impacted Watersheds



Legend

- Sec. 303(d) Reaches
- Unified Watershed Assessment
 - Needs Restoration
 - Meeting Goals
 - Pristine
 - Insufficient Data
- ✕ AMLs w/ Possible Water Impacts
- ▭ BLM Resource Areas
- Public Lands

AML Watershed Projects

There are 2,751 abandoned mine sites with 4,670 features on public lands in Colorado that have possible impacts on water quality in twenty watersheds. These impacts include acidic metal laden drainage from mine openings and dumps, mine wastes and mill tailings in stream channels, and erosion of mine wastes and mill tailings into waterways.

The 3 highest priority watersheds impacted by abandoned mines on public lands include, in priority order, the upper Animas River [Animas (HUC 14080104)], Arkansas [Arkansas Headwaters (HUC 11020001)] and Lake Fork of the Gunnison [Upper Gunnison (HUC 14020002)]. In the large Arkansas River watershed, Colorado BLM is concentrating cleanup efforts in sub watersheds where there is a high concentration of public lands including the Lake Fork, and the 2 historic mining districts of Cripple Creek and Rosita. Thirty five projects are underway or planned in these priority watersheds, as listed in Table 1. These priority watersheds have another 1,306 low priority mine sites on public lands. Based on extensive watershed assessment these low priority mines have little or no offsite impact on watershed resources, and there are no current plans for their cleanup. On-site cleanup for these low priority mines may follow the high priority mines.

The extent of necessary cleanup in the other lower priority watersheds has not been evaluated except for Kerber Creek. In Kerber Creek only 1 cleanup remains. This watershed is close to being fully cleaned up, and its completion would provide considerable satisfaction.

The watersheds were prioritized on the basis of assessments undertaken by the Colorado Water Quality Control Division. Prioritization was a multi-agency process performed twice once in 2000 and again in 2004. Prioritization of the water-quality impacted AML sites was accomplished using the Colorado Clean Water Act Section 303(d) list, abandoned mine inventories from land management agencies, and geo-environmental risk mapping performed by the US Geological Survey. Colorado state and federal agencies have agreed to concentrate their cleanup resources on the priority watersheds. Priority watersheds have undergone significant assessment and risk analysis to determine which mines must be cleaned up to meet water quality goals. Watershed assessment and post cleanup monitoring continues. Typically, only 5 to 10 percent of mines require cleanup for their off-site impacts. The remaining mines may need some cleanup work to remediate on-site degradation.

In regard to Table 1, costs shown are for construction only, and do not include overhead, administration, project management, searches for responsible parties, preliminary assessments and site investigations, and watershed scale investigations. In addition, the partnership column significantly understates partner contributions. The table only notes partner contributions on specific projects and does not include contributions on watersheds as a whole where numerous projects have been completed by others without participation by the BLM. The overall partner contributions on a watershed scale are:

- | | |
|--------------------------|----------------------|
| • Upper Animas River - | Partners 90% BLM 10% |
| • Henson Creek - | Partners 61% BLM 39% |
| • Upper Arkansas River - | Partners 99% BLM 1% |
| • Kerber Creek - | Partners 100% BLM 0% |

Table 1. Priority Watershed Projects

WATERSHED	PROJECTS FUNDED/ PLANNED	AMM Sites # (acres)	FY START	FY FINISH	FINAL/EST TOTAL COST	FINAL/EST BLM PORTION	KEY PARTNERS
1. Lake Fork of the Gunnison	Ute Ulay Mine-Mill	1(10)	2003	2013	\$6,900,000	\$1,600,000	EPA, CO DMG, CDPHE, LFWS
2. Lake Fork of the Gunnison	Roy Pray Mine	1(1)	2003	2006	\$273,700	\$238,000	CO DMG
3. Lake Fork of the Gunnison	Wyoming Mine	1(1)	2003	2009	\$324,300	\$282,000	CO DMG
4. Lake Fork of the Gunnison	Palmetto Mine	1(1)	2005	2007	\$109,250	\$95,000	CO DMG
5. Lake Fork of the Gunnison	GNOME Mine	1(1)	2005	2010	\$242,075	\$210,500	CO DMG
6. Lake Fork of the Gunnison	Risorgimento Mine	1(1)	2005	2008	\$119,600	\$104,000	CO DMG
7. Lake Fork of the Gunnison	North Polar Star Mine	1(1)	2007	2012	\$250,000	\$37,500	EPA, CO DMG
8. Lake Fork of the Gunnison	Hough Mine	1(2)	2010	2013	\$350,000	\$52,500	EPA, CO DMG
9. Lake Fork of the Gunnison	Gladiator Mine	1(1)	2010	2013	\$250,000	\$37,500	EPA, CO DMG
10. Lake Fork of the Gunnison	Ilma-Hiwasse Tunnel	1(1)	2010	2013	\$350,000	\$52,500	EPA, CO DMG
11. Lake Fork of the Gunnison	Hanna Mill Tailings	1(1)	2005	2005*	\$23,200	\$20,152	CO DMG
12. Lake Fork of the Gunnison	Hanna Mine Waste	1(1)	2004	2006	\$27,700	\$24,100	CO DMG
13. Lake Fork of the Gunnison	Hidden Treasure Tails	1(1)	2006	2008	\$134,000	\$115,000	CO DMG
14. Upper Gunnison	Vulcan Mine Waste	1(2)	Unk	Unk	Unk	Unk	Unk
15. Lake Fork of the Arkansas	Nelson Tunnel Mine Waste	1 (2)	2001	2004*	\$180,000	\$130,000	DMG, Colo Mtn College.
16. Lake Fork of the Arkansas	Dinero Mine Waste	1 (10)	2004	2005*	\$300,00	\$197,500	DMG, Colo Mtn College.
17. Lake Fork of the Arkansas	Dinero Mine Tunnel	1 (24)	2006	2010	\$750,000	\$300,000	DMG, Colo Mtn College, NRDA settlement possible
18. Lake Fork of the Arkansas	Querida Mill Tailings	1 (8)	2007	2010	\$185,000	\$130,000	Custer County
19. Lake Fork of the Arkansas	Mill Sap Gulch Mill Tailings	1 (65)	2007	2009	\$900,000	\$150,000	Teller County, DMG, Anglo Gold

WATERSHED	PROJECTS FUNDED/ PLANNED	AMM Sites # (acres)	FY START	FY FINISH	FINAL/EST TOTAL COST	FINAL/EST BLM PORTION	KEY PARTNERS
20. Lake Fork of the Arkansas	Colorado Gulch Mine Waste	10 (23)	2008	2020	\$2,000,000	\$200,000	various
21. Lake Fork of the Arkansas	Tiger Mine	1 (6)	2007	2011	\$400,000	\$242,500	various
22. Upper Arkansas	Mt Robinson Mine Waste	3 (3)	2001	2005*	\$40,000	\$30,000	DMG
23. Upper Arkansas	Powhatten Mine Waste	3 (9)	2000	2004*	\$70,000	\$40,000	DMG
24. Upper Arkansas	Apache Mill Tailings	1 (10)	2002	2006*	\$2,000,000	0	EPA
25. Upper Arkansas	Various Mine Waste in superfund area	? (?)	1995	2006	\$2,500,000	0	EPA and others
26. Upper Arkansas	Roosevelt Tunnel	1 (2)	2008	2010	\$75,000	\$50,000	DMG
27. Upper Animas	Lakawanna Tailings	1(2)	2000	2001*	\$458,000	\$458,000	
28. Upper Animas	Eureka Channel Restoration	1(100)	2004	2009	\$1,400,000	\$543,750	EPA, CO DMG, San Juan County
29. Upper Animas	Lark/Joe & John Mine Waste	2(2)	2005	2007	\$450,000	\$415,000	CO DMG
30. Upper Animas	Joe & John Mine Drainage	1(2)	2008	2010	\$350,000	\$298,000	CO DMG
31. Upper Animas	Forest Queen Mine Drainage	1(5)	1998	1999*	\$500,000	\$391,000	EPA, Colorado School of Mines
32. Upper Animas	Eveline Mine	1(2)	2004	2007	\$287,000	\$243,750	CO DMG
33. Upper Animas	Kansas City Mine	1(5)	2005	2006	\$43,000	None	Animas River Stakeholders Group
34. Upper Animas	North California Mountain Mine	1(2)	2005	2008	\$100,000	\$85,000	CO DMG
35. Upper Animas	May Day Mine Waste	1(1)	1997	1998*	\$140,000	\$140,000	
36. Upper Animas	Elk Tunnel Drainage	1(3)	2001	2003*	\$115,200	\$115,200	
37. Upper Animas	Heniretta No. 7 & 8 Mine Waste	1(4)	2003	2006*	\$548,000	\$69,000	PanEnergy, EPA
38. Upper Animas	American Tunnel	1(2)	2005	Unk	Unk	Unk	Animas River Stakeholders Group

WATERSHED	PROJECTS FUNDED/ PLANNED	AMM Sites # (acres)	FY START	FY FINISH	FINAL/EST TOTAL COST	FINAL/EST BLM PORTION	KEY PARTNERS
39. Upper Animas	Grand Mogul Mine Waste	1(5)	2006	2013	Unk	Unk	Standard Metals, Arava Resources, Sunnyside Gold
40. Upper Animas	Gold Prince Mine Waste	1(3)	1997	1997*	\$151,000	none	Sunnyside Gold
41. Upper Animas	Avalanche Mine	1(1)	Unk	Unk	Unk	Unk	Unk
42. Upper Animas	Highland Mary Mill Tailings	1(3)	Unk	Unk	Unk	Unk	Unk
43. Upper Animas	Silverton Mill Tailings	1(20)	1997	Unk	Unk	Unk	Animas River Stakeholders Group
44. Upper Animas	Kitti Mac Mill Tailings	1(5)	2008	2013	Unk	Unk	Unk
45. Kerber Creek	Elkhorn Gulch Tailings	1(2)	1996	1997*	\$45,000	\$11,500	Asarco, Colorado School of Mines
46. Kerber Creek	Kerber Creek Tailings	1(8)	2004	2008	\$75,000	\$50,000	Various landowners

*Completed projects

AML Physical Safety Sites

The most significant types of mine hazards are open adits and shafts, highwalls, and collapsing buildings. As noted above, Colorado public lands have an estimated 2,751 abandoned mines with 10,818 hazardous mine openings. Thus far 1,456 have been closed. Priority areas for mine closures include public lands in and around the towns of Gold Hill, Boulder, Leadville, Cripple Creek, Canyon City, Westcliffe and Rosita; high use recreation areas Colorado River Special Recreation Area, Unaweep National Scenic Byway, Alpine Loop National Scenic Byway, Gold Belt National Scenic Byway, Dolores Wilderness Study Area, Cochetopa, Blue Mesa, Arkansas River Special Recreation Area; and other areas of high public use including secondary roads, trails, and campgrounds. Planned mine closures are guided by focused inventory assessments starting with those mine clusters in closest proximity to sites with high public exposure.

In the past, Colorado BLM had available mine closure funding ranging from \$100,000 to \$150,000 per year, which resulted in closing over 100 openings per year. Recently, the source of these funds was cut-off, and the mine closure program has become minimal and erratic.

Beginning in FY2006, the BLM will propose another inventory to insure that all abandoned mines on public lands located near populated places and high use areas are included in the inventory. The new data base will have abandoned mines within 1 mile of populated places and high use areas, and will be created from the existing AML inventory and other GIS data bases. Because the existing Colorado BLM inventory was comprehensive, additions from any new inventory effort are not expected to significantly add to the above number. In the proposed new inventory, Colorado BLM

will be cross checking entries in the new data base with the existing inventory and local knowledge of populated places and high use areas. In the process, cost estimates will be prepared to field check any uncertainties. In addition, cost estimates will be prepared for closing known high risk mine openings.

Workload Targets

Workload targets projected for Colorado BLM are shown in Table 2 where the key program elements (PE) are JK, restore water quality, and HP, physical safety hazards mitigated/remediated.

Projected workload targets for Colorado BLM include 251 acres of cleanup for water quality impacts, program element JK in Table 2. Many of these cleanup projects are mixed ownership, which means authorization and funding of cleanups by numerous parties. The process of finalizing project approvals and funding has become long and drawn out. Therefore, the project schedule as laid out in Table 1 may unfold much differently than projected.

Currently funding for mine closures, HP, is minimal and erratic. Because there is no reliable funding and when funding is available it is minimal, Colorado BLM projects annual mine closures to drop from over more than 100 per year in recent years to an average of 30 per year for a total of 210 in this planning period.

The inventory of abandoned mines, BH, is essentially complete on public lands in Colorado. However, each year a few more abandoned mines are discovered in the course of other field work.

Generally, there is a 1 to 1 correspondence between water quality projects, JK, and searches for responsible parties, NP. The number of cost recovery actions, NQ, is unpredictable as it depends on the success of searches for responsible parties. Typically Colorado BLM has 1 or 2 underway each year.

Table 2. Workload Targets

PE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
BH	30	30	30	30	30	30	30	210
HP	30	30	30	30	30	30	30	210
JK	5	12	166	37	6	1	24	251
NP	3	4	3	5	1	1	6	26
NQ	1	1	1	1	1	1	1	7

* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring, NP=Evaluate Cost Avoidance/Cost Recovery, NQ=Process Hazmat Cost Avoidance/Cost Recovery Cases

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Idaho State Office
Abandoned Mine Land Workplan
Period: FY2007 – FY2013

Summary

Public safety and remediation of environmental degradation associated with mining is a continuing and growing land management concern in Idaho. Against the scenic backdrop of Idaho's snow-capped mountains, rich in wildlife and interlaced with rushing white-water rivers, there are widespread environmental impacts and safety hazards resulting from historic mining. While the surface area of most mines is relatively small, the impacts of mining frequently extend into the watershed beyond the mine site, affecting water quality, fisheries, and vegetation. In a state where urban growth, recreational use, and off-road vehicle access now extend to many remote mining sites on public lands, public health and safety has become an alarming concern.

Idaho is unique in many respects. Over 33 million acres (62%) of Idaho are Federal land, and of that, 12 million acres of the surface are managed by BLM. Idaho ranks second in designated wilderness in the lower 48 states (over 4 million acres). World-class scenic mountains; white-water rivers; wildlife; salmon, trout, and steelhead fishing; hunting; and many historic National Trails, most notably the Lewis and Clark Trail, attract thousands of visitors each year. Idaho is nationally noted for an extensive network of trails and backcountry roads used for touring, hiking, mountain biking, and all-terrain vehicle trails.

Rapid population growth throughout many parts of the State has heightened the urgency for stepped-up Abandoned Mine Lands (AML) actions. For instance, recreational use is increasing dramatically, drawing thousands of recreational residents and the visiting public to old, hazardous mining areas coincident with Idaho's natural treasures. Idaho's rivers are host to declining anadromous fish (salmon and steelhead) and bull trout populations, requiring aggressive AML action to improve water quality impacted by mining.

As with many western states, the economic base in Idaho is clearly shifting from a natural resource-based economy to high-tech, diverse, and business-oriented economy. Today, active mining of phosphate and other industrial minerals dominates the mining industry in Idaho. Two underground silver mines continue to produce in the Silver Valley. Sand and gravel operations now dominate Idaho's mineral production, as related to persistent high demand for building materials near the state's rapidly growing urban centers. The ever increasing impacts from past mining illustrate the need to improve the public lands now for safe and sustainable land uses for the future.

Significant historic mining areas in (State) include:

- Coeur d' Alene Basin (Silver Valley; northern Idaho)
- Idaho Phosphate Field (southeastern Idaho)
- Salmon-Challis Area (east-central Idaho)
- Hailey-Sun Valley Area (south-central Idaho)
- Owyhees Mountains (southwest Idaho)

The Coeur d'Alene Basin and Idaho Phosphate Field listed areas are considered "world class" mining districts. Mining in the Silver Valley has produced over a billion ounces of silver and

significant tonnages of lead, zinc, and copper from deep, high-grade veins since the district was discovered in the 1880's. Industrial minerals, which continue to be dominated by phosphate, account for over 50 percent of the current several hundred-million-dollar industry in the State. Recent years have brought attention to selenium-contamination associated with phosphate mining in southeastern Idaho. While outside of the major concentrations of mining activity, many other smaller mining districts may also present environmental and safety concerns worthy of consideration in Idaho's AML program.

Throughout most of the past century, Idaho has been a significant national producer of metallic minerals, such as gold, silver, lead, zinc, copper, and molybdenum. In the context of the AML cleanup program, abandoned mines that produced these "hardrock" minerals are the focus of most water quality and safety mitigation projects. Other minerals in Idaho such as tungsten, a somewhat unusual mineral commodity, contributed to the strategic mineral mining effort, most notably during the World War II and Korean War efforts. The exploration of minerals, including relatively rare thorium deposits along the Idaho-Montana border in east-central Idaho, present additional safety and radiation hazards adjacent to the Lewis and Clark National Historic trail. Idaho is experiencing a greatly increasing level of visitors in 2005-2006 associated with the bicentennial commemoration of the Lewis and Clark Expedition.

BLM Idaho has a current inventory in the Abandoned Mine Module (AMM) of 575 known abandoned hardrock mines on public lands (see Figure 1). This inventory includes at least 80 mines that may impact water resources; over 250 sites likely pose significant physical safety hazards. To date, Idaho BLM has completed or is working on environmental/water quality projects (of various sizes) on 36 sites. Physical safety hazards have been fixed at 27 AML sites. This inventory represents BLM's currently well-documented sites. The Idaho Geological Survey's Mines and Prospects database and the distribution of historic mine districts includes more than 8,000 sites, alluding to even greater AML potential throughout Idaho (see Figures 2 and 3).

AML Watershed Projects

Based on current knowledge, there are at least 50 abandoned mines on public lands in Idaho that may have possible impacts on water quality in 4 priority watersheds. However, many more isolated AML sites have significance, yet are not associated with more large-scale watershed efforts. The distribution of these mine sites is due in part to the diversity of geology and mineral deposit types found in Idaho.

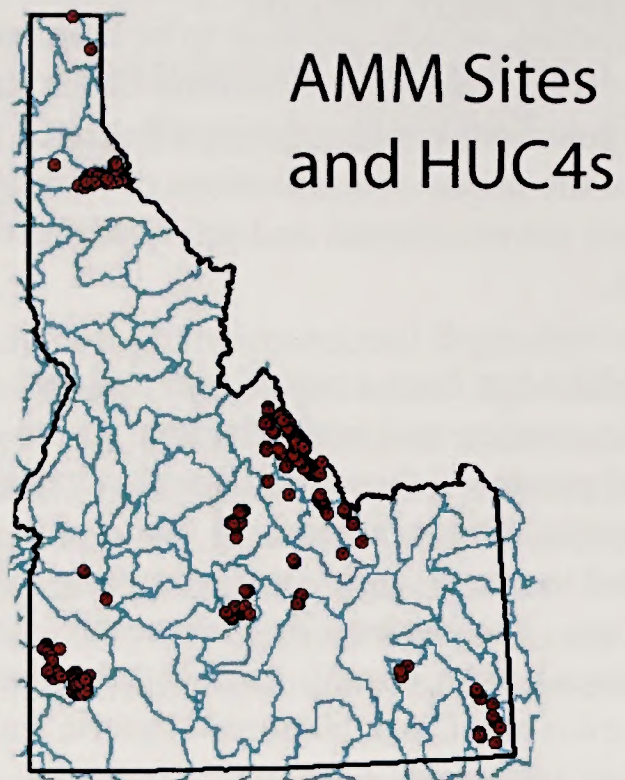


Figure 1. Current AML inventory of sites and HUC 4 watersheds

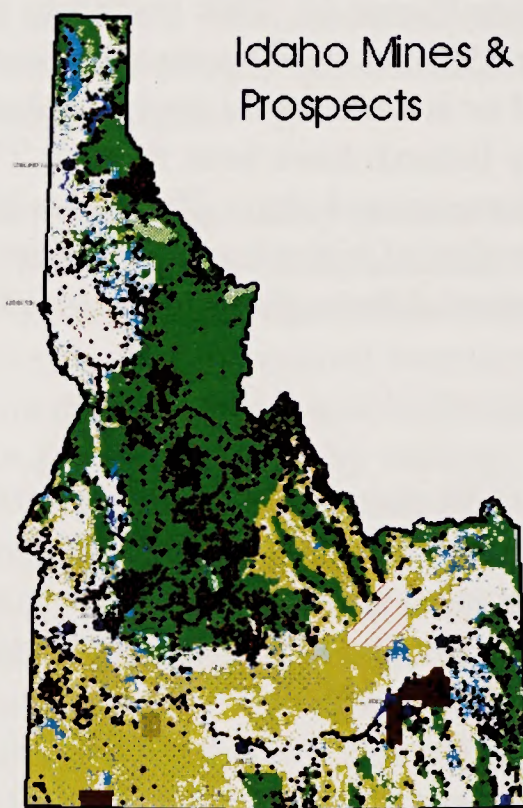


Figure 2. Idaho Geological Survey Mines and Prospects.

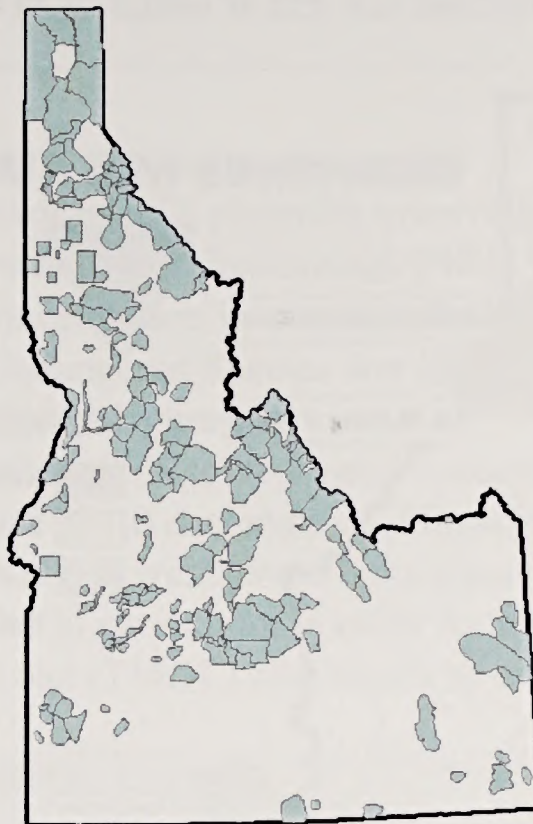


Figure 3. Idaho's mining districts.

Many AML sites directly affect water quality and the habitat of listed and threatened species under the Endangered Species Act, most notably, fish including salmon, steelhead, and bull trout. In 2005, in compliance with a court order, the U.S. Fish and Wildlife Service designated critical bull trout habitat in the Pacific Northwest. In Idaho, 294 stream miles and 50,627 acres of lakes or reservoirs were officially designated as critical habitat for bull trout.

Abandoned mines in Idaho that present risk to the public and environment include the following impacts:

- Metal-laden drainage from mine openings and waste dumps;
- Mine tailings in stream channels;
- Contaminated soils;
- Erosion of mine wastes into streams;
- Absence of fisheries and other biota;
- Lack of vegetative cover; and
- Associated physical safety hazards.

The 4 (A) priority watersheds impacted by abandoned mines on public lands include, in priority order (see Figure 4)

1. South Fork of the Coeur d' Alene
2. North Fork of the Coeur d' Alene
3. Upper Salmon
4. Jordan Creek

Important AML site cleanups and investigations, outside of these major concentrations of historic mine activity has also been completed and is continuing in other watersheds as shown on Figure 4.

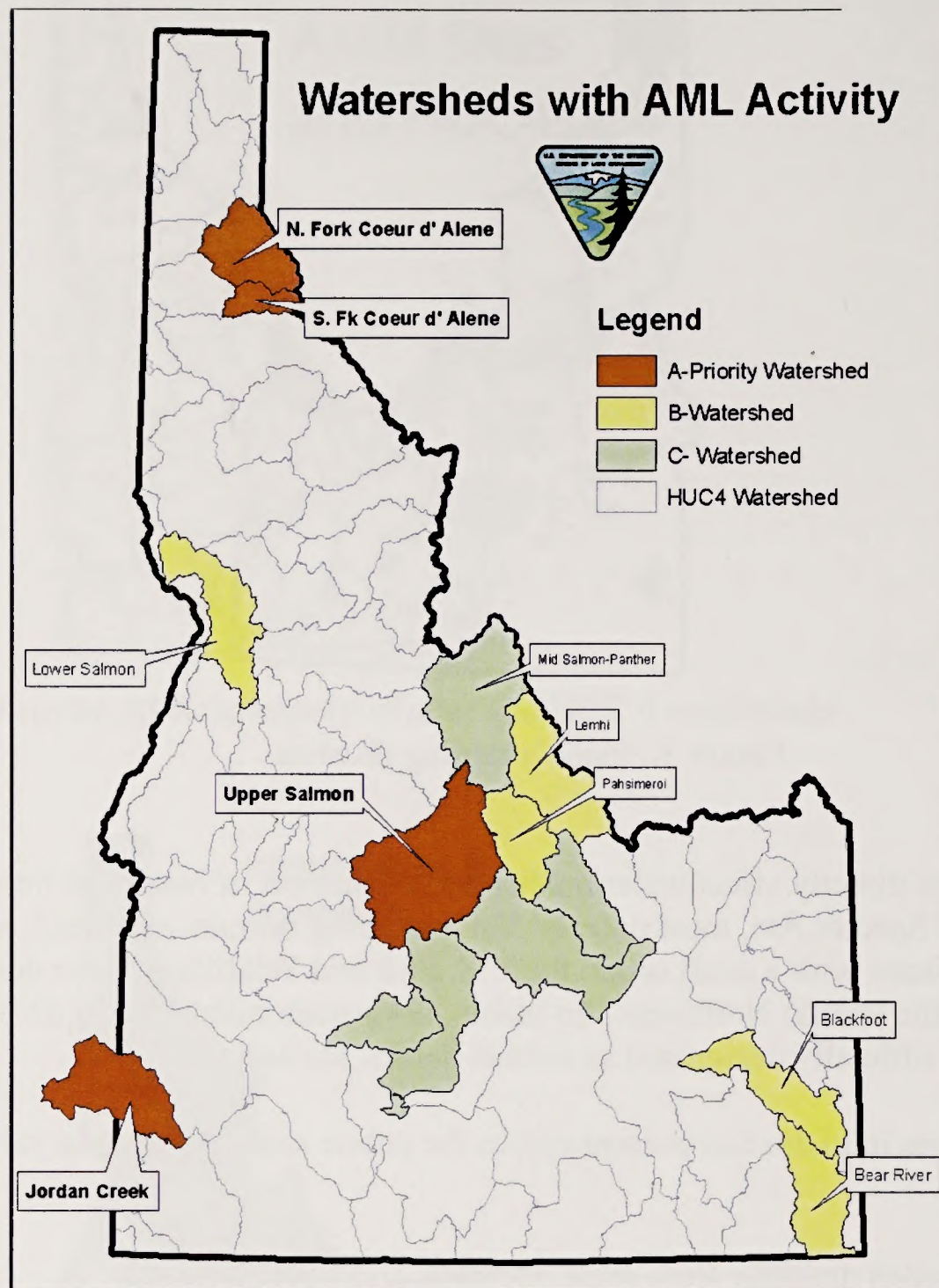


Figure 4. Watersheds with AML activity.

AML work is currently underway in 8 watersheds, involving all 4 of the priority watershed projects. BLM in Idaho has a Memorandum of Understanding (MOU) with: Idaho Department of Environmental Quality (DEQ), Idaho Department of Lands, and U.S. Forest Service (Regions 1 and 4). Through this MOU, the agencies have pledged to work together prioritize watersheds impacted by AML sites and to seek partnerships in characterization and cleanup efforts. The Idaho Geological Survey also participates with agencies under cooperative agreements to lend assistance to the agency efforts in inventory and investigation of abandoned mine sites. On an ongoing basis, the parties share information and seek opportunities to cooperate on projects in mixed land ownership areas.

Prioritization of the water-quality impacted AML watersheds and sites is accomplished using:

- State and EPA direction (e.g., Clean Water Act Section 303 (d) list of impaired water bodies);
- EPA Superfund actions;
- Basin-wide, multi-agency watershed assessments;
- The Court decision in favor of DOI plaintiffs involving Coeur d' Alene Basin Natural Resource Damage Assessment and Restoration (NRDAR); see Figure 5);
- Measured toxic metal concentration in water, sediment, or biota;
- Designated habitats of Endangered Species Act listed and endangered fish species (salmon, steelhead, and bull trout); see Figure 6);
- Mine adit discharges with high dissolved metal concentrations;
- Clean Water Act Section 303 (d) designation of impaired water bodies (difficult to use this solely due to the designation is widespread throughout the entire state of Idaho, and the designations are often due to agriculture or other sources (see Figure 7); and
- Total Maximum Daily Load (TMDL) allocations as established by the State.

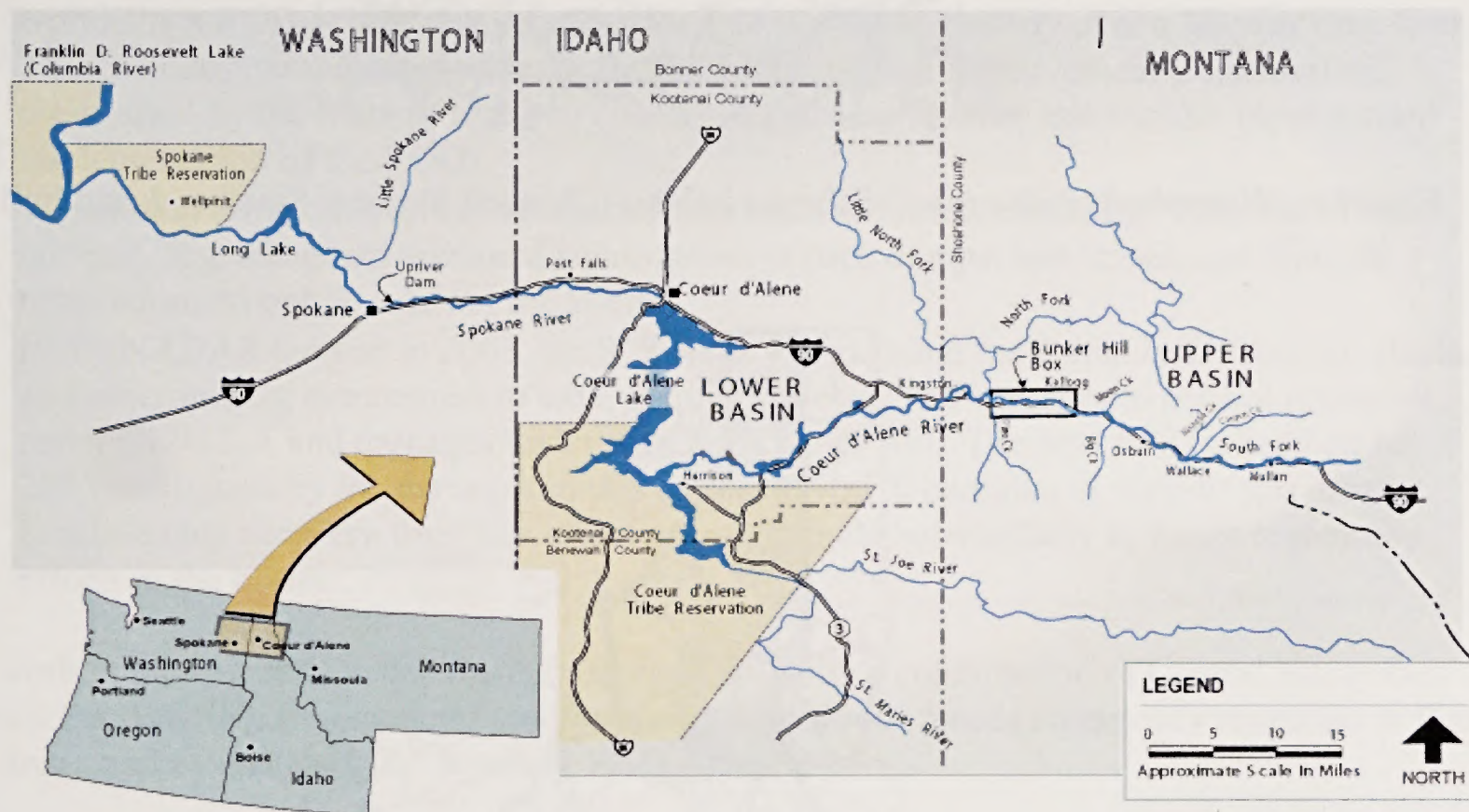


Figure 5. Coeur d' Alene Basin (from EPA, Region 10).

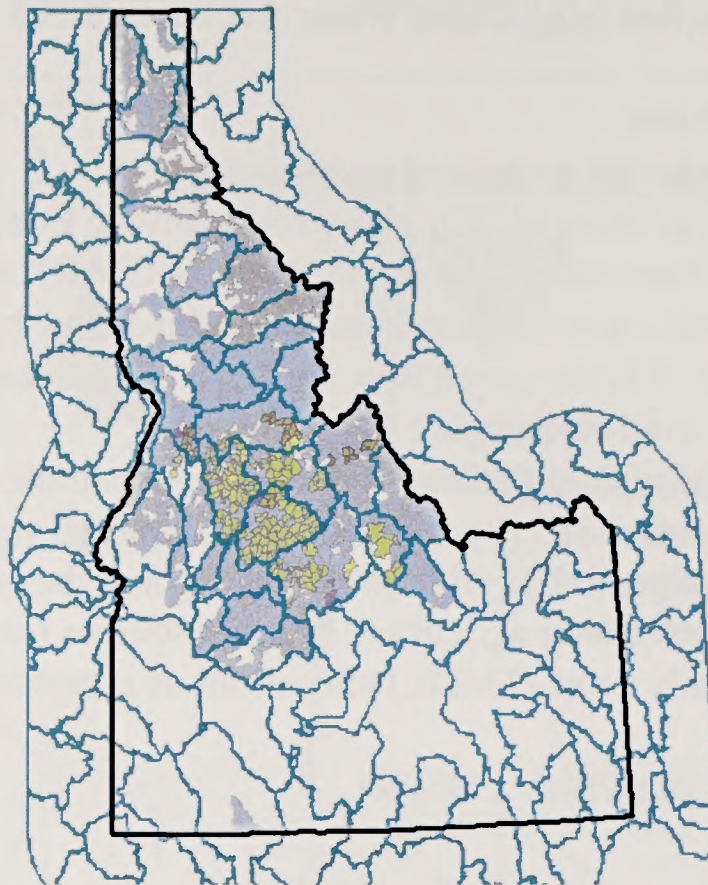


Figure 6. Watersheds with critical fisheries habitat (Chinook Salmon, Steelhead, and bull trout).

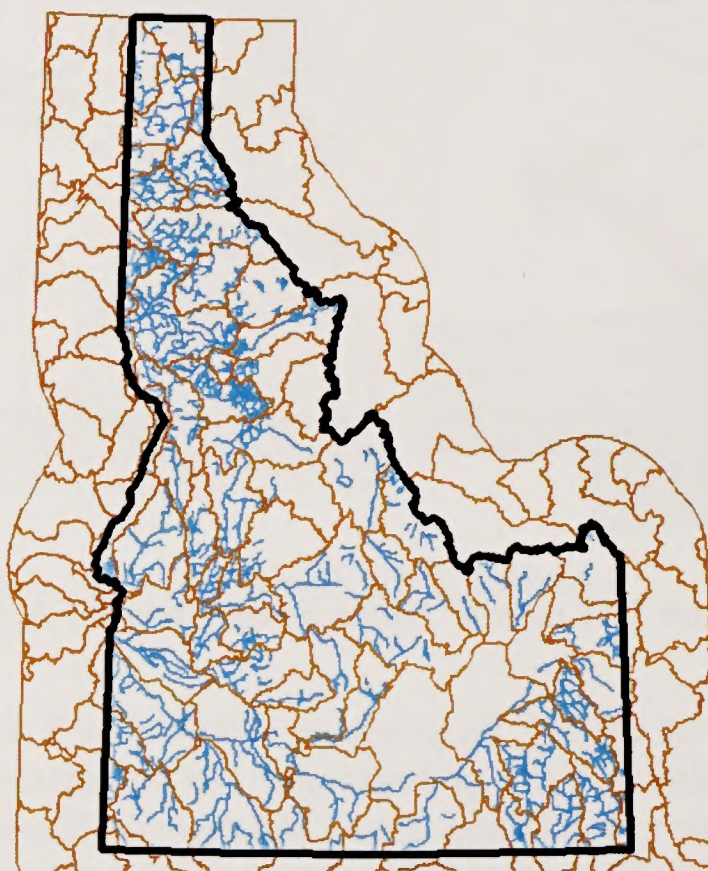


Figure 7. 303d- designated impaired streams.

South Fork of the Coeur d' Alene (1)

The extent and complexity of mining impacts in the Coeur d' Alene Basin is magnitudes of order above anywhere else in Idaho. Over the past 20 years, BLM, along with other Interior agencies, U.S. Forest Service, Environmental Protection Agency (EPA), the state, and the Tribes have actively participated in efforts to address mining impacts over a 1,500 square mile area in the Coeur

d' Alene Basin (fig. 6). Extensive volumes of studies have shown metal-contaminated soils, sediments, surface water and groundwater throughout the basin as a direct result of mining. In 1983, the EPA listed the Bunker Hill complex, a 21-square mile "box" as a Superfund site – the second largest in the country. In 1998, EPA extended the superfund requirements beyond the box, to the entire basin. In 2002, EPA issued a Record of Decision (ROD) that prescribed a final remedy to address human health risks and an "interim remedy" to begin to mitigate ecological risks.

BLM's role in the Coeur d' Alene Basin has been:

- To cooperate and support the massive Department of Interior's Natural Resource Damage Assessment and Restoration (NRDAR) process for the Coeur d'Alene Basin;
- To assess mine-related natural resource injuries and to develop plans for cleanup and restoration;
- To cooperate with EPA, Tribes, and State agencies;
- To provide information for the litigation discovery process;
- To participate in the implementation of EPA's remedial plan for the Basin in accordance with EPA's ROD. (The plan provides for a \$359 million remedy over a 30-year time frame. This includes participating with the Basin Environmental Improvement Commission, established by the State of Idaho to coordinate public and other stakeholder input toward implementation of the ROD).
- To conduct mine cleanup and resource restoration activities, including: removal of mine tailings; regrading and erosional stabilization of rock dumps; and stream and riparian restoration; on public lands in the Basin;
- In the NADAR lawsuit in 2003, the 9th Circuit Court found the Defendants (Asarco, Hecla, and other mining companies) to have liability for costs and damages to natural resources under CERCLA and damages under the Clean Water Act. The next trial (scheduled for 2006) will quantify the damages in this case. BLM will continue to support this effort. Possible cost-recovery from this effort may contribute substantially to future restoration efforts in the basin.

AML work in the Coeur d' Alene Basin has been funded by a combination of Central Hazardous Materials Fund (CHF), Emergency Flood funding (1996 floods forced emergency removals in Pine Creek area), and by AML-1010. Work includes done:

- Mill site and tailings removals;
- Stream stabilization;
- Rock-dump stabilization;
- Re-vegetation;
- Installation and operation of passive mine water treatment systems; and
- Mine adit and other safety closures.

In October 2005, the National Academy of Sciences released a comprehensive report analyzing the progress of EPA and partners in addressing the Coeur d' Alene Basin mining issues. General findings include:

- "EPA has used generally sound scientific and technical practices to make decisions about human health risks at the Coeur d'Alene River Basin Superfund site in Idaho, and planned remediation efforts for reducing targeted human-health risks."
- "However, there are substantial concerns regarding EPA's plans to protect the environment

including fish and wildlife—plans that account for about three-fourths of the proposed \$359 million in expenditures—particularly concerns about the long-term effectiveness of the proposed environmental remediation efforts.”

- Chapter 8, page 2: “Pine Creek has already experienced considerable cleanup work, particularly by the Bureau of Land Management, and the creek currently supports an adult fishery, including brook trout and native cutthroat trout. The proposed remedial action for this area focuses on habitat rehabilitation and limited removals. The committee commends EPA on efforts to restore fish habitats in upper basin tributaries. Simply removing dissolved metals is insufficient to restore fisheries; to be successful, habitat restoration is critical...”

North Fork of the Coeur d’ Alene (2)

During 2001-2003, the U.S. Geological Survey, in cooperation with State and Federal agencies conducted a watershed assessment of the North Fork. This watershed assessment was similar in methodology to AML pilot watershed assessments of Colorado’s Animas Watershed and Montana’s Boulder Basin Watershed. BLM applied funding to conduct these studies along with Region 1 Forest Service, Idaho DEQ, Idaho Department of Lands, and EPA. While the assessment found much of the mine-related contamination to be associated with Forest Service ownership, a few sites of mixed ownership have BLM concerns. Rock dump stabilization, revegetation and installation and operation of passive pilot mine water treatment systems have been pursued in this watershed.

Upper Salmon (3)

Sites include: Clayton Silver Mine, Bayhorse Mining District (including Riverview, Red Bird, Compressor, and Powderbox sites), and Daughtery Springs. Mining activity in this watershed directly impacts listed Salmon in the main Salmon River. BLM cooperated with design and planning efforts for EPA’s large-scale tailings stabilization at the Clayton Mine in 2001-2003. In addition, BLM subsequently enhanced EPA’s cleanup effort by providing post-cleanup stream-channel restoration, riparian revegetation, and water-quality monitoring. The Bayhorse Mining District is currently proposed for development of a state historical park. BLM is cooperating with the state in assessment of possible environmental and safety risks and planning safety closures on sites adjacent to the proposed state park.

Jordan Creek (4)

Mercury concerns prompted EPA, and cooperating agencies BLM and the State in a watershed sampling study in 1999-2000. Mercury contaminated fish advisories in the Owyhee and Antelope Reservoirs (in Oregon, at the lower reach of the Jordan Creek watershed). As a spin-off of the watershed sampling, BLM has conducted 3 cleanups/investigations in the Owyhees. Mercury appears to have moved down through the watershed, probably originating from mercury inputs from amalgamation processes (14 mills operating near Silver City, each losing 1 flask of mercury per day for several years in the late 1860’s). In addition to human health concerns, BLM recognizes Red-band Trout and Spotted Frog are as sensitive species.

Other watersheds include areas where AML site cleanups and investigations have occurred at a less than watershed effort. The exception is mine-related CERCLA activity, in the Idaho phosphate field in southeastern Idaho that is the focus of concentrated effort with selenium contamination associated with phosphate mining and mine waste. This work is within the Blackfoot and Bear River watersheds (fig. 4). The AML 1010 program has contributed by supporting inventories of several smaller historic, orphan phosphate mines. Most of the area assessment and CERCLA actions have been conducted by a multi-agency stakeholder group lead by the Idaho Department of

Environmental Quality, but including BLM, Forest Service, the Tribes, and private industry. To date, BLM has been intimately involved in this effort, supported mostly by the Central HazMat Fund (CHF) and the 1330 subactivity.

AML Physical Safety Sites

Over 200 high-risk mine openings have been identified on BLM managed lands in Idaho. As previously noted, Idaho is famous for recreational opportunities throughout much of the state. The majority of these sites are within the jurisdiction of 8 BLM field offices. The most significant types of mine hazard feature are open adits and shafts remaining at AML sites in high-use areas including: (1) the Lewis and Clark National Historic Trail; (2) Owyhee Mountains (proximal to Idaho's main population center in the Boise area); (3) Coeur d' Alene Basin; the (4) Challis Field Office area; the (5) Salmon Field Office area; and (6) Sun Valley-Hailey area. These areas have high use for camping, hiking, boating, ATV use, mountain biking, fishing, and hunting. \$650,000 is the estimated need to close all significant mine hazards in these recreation-rich areas in Idaho. These mines also have significant disturbed surface areas and mine wastes that require regrading, capping and revegetation. Figure 8 displays the AMM inventory sites overlain with BLM's Facility Asset Management System (FAMS). Many mine sites are in close proximity to these recreational facilities.

Remediation at key sites is guided by focused inventory assessments starting with those site clusters in closest proximity to these sites with frequent exposure to the recreational public. BLM has abundant developed campsites and other recreational areas intertwined with historic mining activity (fig. 7). In addition, the Historic National Trails, including the Nez Perce Trail, and most notably the Lewis and Clark Trail, that is being commemorated during the 2005-2006 season are attracting thousands of visitors to the Salmon-Challis area. Coeur d' Alene FO was a cooperator on the Trail of the Coeur d' Alenes Rails-to-Trails bike-trail project and has done shaft and adit closures along the Mineral Ridge recreational trail.

Idaho being a non-coal (non-SMCRA) state, has no funding or State agency dedicated to mitigation of AML sites. Funding of physical safety sites is being accomplished by: hazards management (base1640 subactivity funding; Special Cleanup Fund (Lewis and Clark Trail hazards, in 2005-2007); AML 1010 subactivity funding (where water quality projects are being conducted).

AMM and FAMS sites

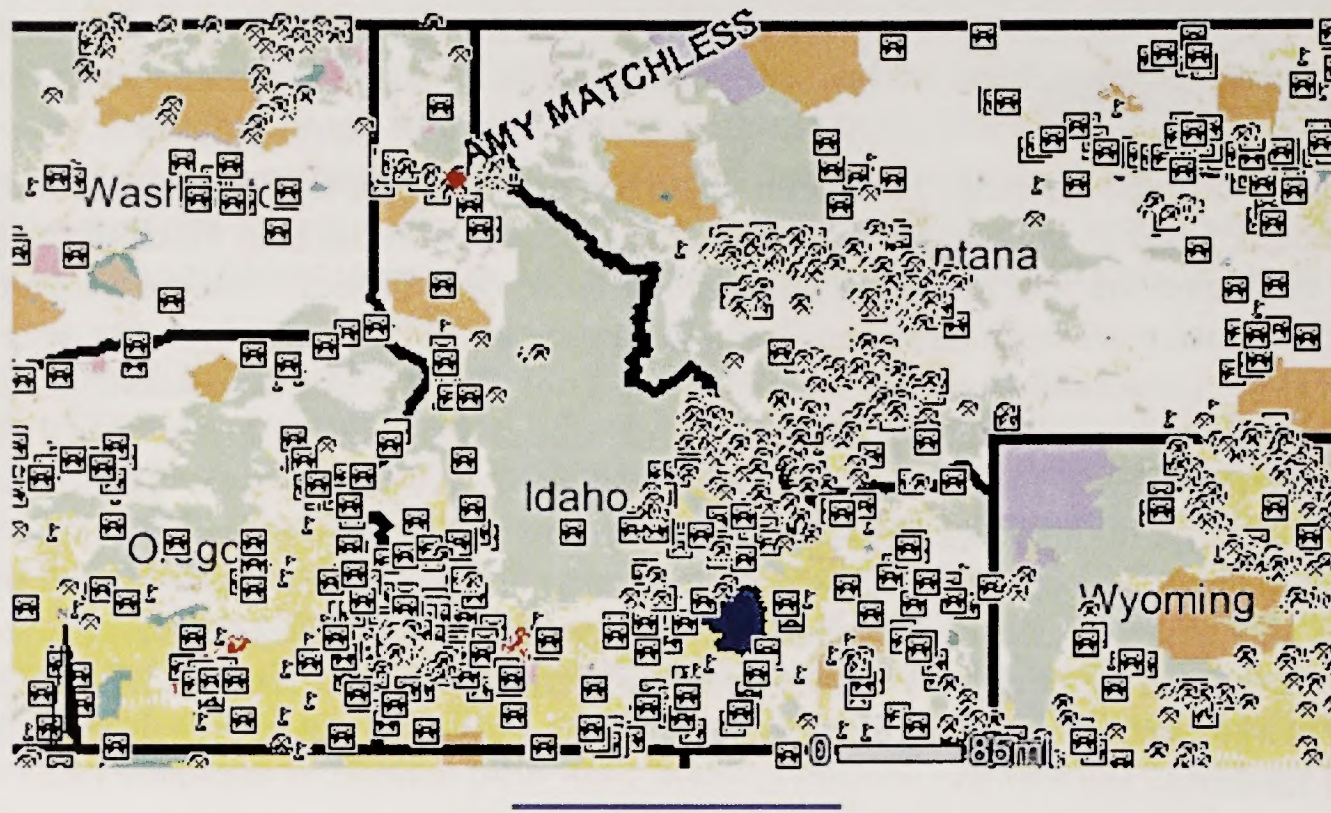


Figure 8. Idaho AML sites from AMMs and FAMS recreation overlay. Note close correspondence of AML sites and recreational areas.

Strategies now being employed by Idaho to expedite physical safety site closures include:

- Focused inventory and site assessments in areas of high-recreational use and proximity to populations;
- Cooperative mine closure work through an assistance agreement with the Sawtooth National Forest's Mine Closure Team;
- Establishment of a Physical Safety Hazards Contract for Idaho (through the National Business Center; (This contract has 5 contractors associated that are capable of providing mine closure work.);
- Development and District-wide zoning of mine closure expertise in the Salmon Field Office, and other operations staff in the Idaho Falls and Boise Districts; and
- Use of an assistance agreement with the Idaho Fish and Game to cooperatively conduct bat clearances prior to closures.

The following tables list: priority watershed projects (table 1); priority physical safety projects (table 2); and workload targets (table 3) that are currently estimated from FY 2007-2013. Estimates are subject to revision.

Table 1.

Priority Watershed Projects							
WATERSHED	PROJECTS FUNDED/ PLANNED	# AMM Sites In project	FY START	FY FINISH	EST TOTAL COST \$	EST BLM PORTION \$	KEY PARTNER S
1. South Fork of the Coeur d' Alene	Coeur d' Alene Mine Water treatment	4 sites	Continuing, 2007	2032+	70,000	70,000	EPA, Idaho DEQ/Dept. of Lands, State, Tribes, other Fed. agencies
"	CdA Basin Rock Dumps	10 sites	Continuing, 2007	2010	120,000	120,000	"
"	Pine Creek Monitoring	8 sites	Continuing, 2007	2013	600,000	280,000	"
"	NADAR and CdA Basin Remedial Action Cooperation	Many sites	Continuing, 2007	2013+	359 million	2,000,000	"
"	Grouse Creek Stabilization	1	2007	2009	60,000	60,000	"
2. North Fork of the Coeur d' Alene	Idora Mine	1 site	Continuing, 2007	2009	50,000	80,000	Idaho DEQ, Forest Service, EPA
3. Upper Salmon	Bayhorse Mine District	4 sites in the project	Continuing, 2007	2010	1 million+	60,000	Idaho DEQ, Forest Service
4. Jordan Creek	Sonnemann Mine Tailings	1 sites	2006	2008	250,000	300,000	Idaho DEQ, Private?
Other Watersheds:							
Mid-Salmon – Pather Creek	Twin Peaks Mine	1 site	Continuing, 2007	2006	300,000	200,000	Idaho DEQ
Lemhi	Buckhorn Mill Cleanup	1 site	2007	2008	200,000	150,000	Idaho DEQ
"	Gilmore Tailings	1-2 sites	2009	2011	200,000	150,000	Idaho DEQ/Dept. of Lands
Pahsimeroi	Ima Mine Rehab monitoring, reveg.	3 sites	2007	2011	40,000	40,000	Idaho DEQ/Dept. of Lands; Trout Unlimited?

Table 2.

Priority Physical Safety Hazard Sites					
RECREATION AND HIGH USE AREAS	Project Name	# AMM sites in the project	Fiscal Years	EST BLM COST \$	KEY PARTNERS
1. Lewis & Clark National Historic Trail	Lewis & Clark Trail SCF	15	2004-2008	150,000	Forest Service, Idaho Dept. of Lands
2. Owyhee Mountains	(Project Names)	20	2006-2010	70,000	Idaho Dept. of Lands
3. Coeur d'Alene Basin	CdA Mine Adit closures	40	2003-2013+	120,000	Idaho Dept. of Lands
4. Challis FO area	Bayhorse District	5	2007-2011	60,000	Idaho Dept. of Lands, Forest Service
"	Clayton Area	5	2007-2011	20,000	Idaho Dept. of Lands, Forest Service
"	MacKay Mine District	3	2009-2011	30,000	Idaho Dept. of Lands, Forest Service
5. Salmon FO area (outside L&C)	Nicholia – Viola Mine area	4	2005-2007	30,000	Idaho Dept. of Lands, Forest Service
"	Gilmore Mining District	15	2008-2011	40,000	Idaho Dept. of Lands, Forest Service
"	Other areas	10	2009-2011	25,000	Idaho Dept. of Lands, Forest Service
6. Hailey – Sun Valley Area	Bellevue area	12	2001-2011	40,000	Idaho Dept. of Lands, Forest Service
7. Cottonwood Field Office	Cottonwood Field Office	10	2009 - 2011	30,000	Idaho Geological Survey, Idaho Dept. of Lands, Forest Service
"	Marshall Mtns.	3	2009-2013	20,000	Forest Service
"	Lower Salmon	7+	2010-	30,000	Forest Service, Idaho Dept. of Lands
"	Elk City	7	2012-	30,000	Forest Service, Idaho Dept. of Lands
8. Boise Foothills	Boise Area AML hazards	3	2008-2011	10,000	Idaho Geological Survey, Idaho Dept. of Lands, Forest Service

Table 3. Workload Targets

PE	Description	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
BH	Inventory Abandoned Mine Land sites	30	30	25	20	15	10	10	140
HP	Abandoned Mine Land with Physical Safety Hazards Mitigated/Remediated (number of sites).	15	15	15	15	15	12	10	97
JK	Implement AML projects- restore water quality (acres)	25	20	15	15	15	15	10	115
NP	Evaluate PRP's for Cost Avoidance/Recovery	3	3	3	3	3	3	3	21
NQ	Process Hazmat Cost Avoidance / Cost Recovery Cases	1	2	2	0	0	0	0	5

For specific details on planned, ongoing and completed projects, go to the BLM Idaho AML web site at:

<http://www.id.blm.gov/aml/index.htm>

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Montana

Abandoned Mine Land Workplan

Period: FY2007 – FY2013

Summary

With respect to locatable minerals, Montana was historically one of the most active and productive metallic mineral producing areas in the world and is presently rated as 4th among the states by the minerals industry for its mineral exploration potential. While production has presently dropped off the future potential to produce metals and industrial minerals in southwest and western Montana is great.

Some of the significant mining areas in Montana, as described on the DEQ web site, are the precious metal districts of western and southwestern Montana. Placer gold was first discovered in the Gold Creek area in 1852, production began in 1862 in Bannock, followed in 1863 by Virginia City. Helena, Silver Bow Creek, Confederate Gulch, Bear Gulch, Elk Creek, Gold Creek, Carpenter Creek/Blackfoot City, Indian Creek and numerous other locations in central southwestern Montana were soon were producing placer gold as well.

By 1887, Montana led the nation in production of silver. The Butte District was Montana's largest producer of silver. And the Granite Mountain and Bimetallic mines at Phillipsburg were thought to be the largest single sources of silver in the world. Development of the rich silver deposits at Wickes, Hecla, Rimini, Castle, Elkhorn, and Neihart further expanded Montana's production. The Butte District also produced copper for the expanding electric age.

The evolution of cyanide processing enabled gold extraction from previously unprofitable ore and large gold mines were developed such as at Golden Sunlight in the Whitehall District.

Montana has also been a large scale producer of base metals including zinc, manganese and lead. Copper, lead, and silver have been produced from lode mines in numerous districts throughout western and southwestern Montana. Most of the copper which made the electric age possible came from mines in the Butte district.

Sapphires were produced on a large scale from placer deposits around the Upper Missouri Lakes and the Rock Creek area. Placer gold and sapphires are still produced from numerous small productions in this district.

Industrial minerals have been also been and are being produced throughout western Montana. Talc deposits are prominent in the Dillon area, limestone is abundant in the Butte area and Garnet Range, and phosphate was historically produced from both the Missoula, Dillon and Butte Field Office areas.

Site Status

The Western BLM Montana zone (BFO, DFO, MFO) currently has an inventory of 1,183 known abandoned hardrock mines on public lands with both BLM and mixed ownership. This inventory

includes 5 unreclaimed mines that may impact water resources within 2 priority watersheds (Upper Missouri and Beaverhead); 59 unreclaimed sites likely pose physical safety hazards. To date, 16 water quality projects, including 18 sites have been remediated. Six of these water quality sites were reclaimed in partnership with the state of Montana or the EPA. Forty-one sites with physical safety hazards have been remediated.

AML Watershed Projects

There are presently 5 known unreclaimed abandoned mines on public lands in Montana's Western Zone (BFO, DFO, MFO) that have possible impacts on water quality of 1 priority water shed, the Upper Missouri. These impacts include placer tailings inhibiting the flow of water and metals in mine dumps or tailings that may erode or mobilize into the watersheds. The 3 highest priority watersheds impacted by abandoned mines on public lands include, in priority order, the Boulder River, Ten Mile and Indian Creek. Work on BLM sites impacting water quality in the Boulder River has been completed (High Ore, Redwing Waldy). Work from 2007 to 2013 will include mines in the Upper Missouri.

The watersheds were prioritized on the basis of several inventories conducted by the Montana Bureau of Mines and Geology (MBMG) for the Forest Service and the BLM on the public lands in the early 1990s. The Montana Department of Environmental Quality (DEQ) conducted inventories during this period on private lands and mixed ownership sites. Periodic meeting between the agencies identified sites that ranked high for environmental degradation and presented opportunities for partnerships between the various agencies. These sites were remediated first. Agencies also had sites that were not mixed ownership which they remediated as funding allowed. They generally followed a prioritization scheme based on hazards presented to the environment and public health and safety. The watershed approach allowed several large mixed ownership sites to be reclaimed. The Boulder watershed with the High Ore, Comet, and City of Basin sites were cooperative efforts of DEQ, BLM, FS, and EPA. Public participation occurred both on the project specific level and the in the watershed selection.

Pegasus's bankruptcy at the Zortman/Landusky Mines resulted in AML funds augmenting the reclamation bonds to ensure that the preferred alternative identified in the reclamation EIS being implemented. The reclamation planning process was a cooperative effort of the BLM, DEQ, EPA, Fort Belknap Tribes and others. The dirt reclamation at the site is complete although water treatment will continue indefinitely. There is an annual shortfall of \$700,000 for water treatment. The treatment process is currently being studied by DEQ and BLM through the EE/CA process to identify the most efficient and cost effective treatment process that will meet water quality standards to extent possible. The MT Congressional delegation asked BLM to allocate funding to this project.

Table 1.

Priority Watershed Projects FY 2007-FY2013							
WATERSHED	PROJECTS FUNDED/ PLANNED	# AMM Sites	FY START	FY FINISH	EST TOTAL COST	EST BLM PORTION	KEY PARTNERS
1. Lower Missouri	Zortman/Landusky Water Treatment	125 acres at 1 site	2002	2017	7.5 M	2.5 M	MT DEQ, Fort Belknap Tribes
2. BFO – Upper Missouri	Indian Creek Tailings	50 acres at 1 site	2005	2009	\$1.5M	BPS (est. \$1.5M)	Possible partners: National Guard, Greymont Mining, FWP
3. BFO - Upper Missouri	Iron Mask	~ 5 acres and 5 physical safety sites at 1 site	2006	2010	\$750,000	BPS (est. \$750,000)	None
4. BFO – Upper Missouri	Great Divide Sand Tailings	4.3 acres at 1 site	EE/CA in 2005	2008	\$550,000 (total – 750,000)	\$750,000	None
5. BFO - Upper Missouri	Hard Cash	~5 acres at 1 site	2009	2011	\$250,000 (est.)	\$250,000	None
6. BFO- Keating Gulch	Keating Tailings (Mixed ownership, BLM = ~8%)	~10 acres total, of which ~8% is BLM, funding revegetation study at 1 site	2005 began monitoring	2007	\$15,000/year Total \$30,000	BPS (est. \$30,000)	None
7. East Pacific Repository (FS)	Repository to hold wastes from FS sites in N. Elkhorn Mts.	Unknown at present	Unknown at present	Unknown at present	Unknown at present	Unknown at present	Forest Service

AML Physical Safety Sites

To date 41 high-risk mine openings have been remediated and an additional 60 identified on BLM managed lands in southwest Montana. These sites are within the jurisdiction of the Butte, Dillon, and Missoula BLM Field Offices. The most significant type of mine hazard features are abandoned adits and shafts remaining at AML sites in close proximity to high use areas. Three mines with possible physical safety hazards near high use areas are presently known to exist in the field office areas:

- Scratchgravel Project consists of 2 mines (South Hopeful and Magpie) that lie in the Scratchgravel Hills which is a high use recreation area near the city of Helena where people ride motorcycles, horses and hike.
- The Sheep Creek mine contains an abandoned pit and adits near a Forest Service Campground.

These areas have high use for hiking and riding off road vehicles. It is estimated that \$47,000 will be required to remediate these mine hazard hazards. These mines will be backfilled or closed with bat friendly gates.

Remediation at key sites is guided by focused inventory assessments starting with those site clusters in closest proximity to sites with high public exposure.

Table 2.

Priority Physical Safety Hazard Sites 2007-20013 NOTE – THIS PRIORITY LIST WILL VARY OVER TIME DEPENDING ON THE PROGRESS OF WORK, NEW FOUND SITES AND THE PRESENCE OR ABSENCE OF ACTIVE CLAIMANTS Cost estimates based on \$3000/feature for bat & cultural surveys, closure designs and closure. Actual costs for each site will vary greatly					
RECREATION AND HIGH USE AREAS	# OF AMM SITES	FY START	FY FINISH	EST BLM COST	KEY PARTNERS
Butte Field Office					
1. BFO - Scratchgravel Hills (priority site hear near Helena)	1) Scratchgravel Project – 2 sites, 7 features A.) South Hopeful – Install Bat Gate B) Magpie Extension Group – 6 features – backfill and gate	2005	2007	BPS (est. \$39,000)	None
2. BFO - Keating Gulch Area (moderate use – hunting)	1) Keating Safety Project – 3 sites, 16 features (background surveys completed) A) Hard Cash – 7 features B) Hawk – 4 features C) Copper King – 5 features	2004	2007	BPS (est. \$42,000)	None
3. BFO – Iron Mask (low use – hunting)	1) Iron Mask Physical Safety Project, 1 site, 3 features	2006	2010	\$9,000	None
4. BFO - Big Indian	A) Big Indian – 1 site, 2 features	2006	2007	\$6000	None
5. BFO – Camp Creek (low to moderate use – hunters)	1) Camp Creek Project – 6 sites, 25 features A) Nitrogen – 4 features B) Mullens – 10 features C) Camp Creek – 6 features D) Chlorite (2 features) E) Hidden Mine – (2 features) F) Earl’s Prospect (1 feature) (Monitor claim status of Short shift & Little Butte)	2007	2008	\$75,000	None

6. BFO – Fish Creek (Isolated – low use area)	A) Fish2Heart – 1 site, 4 features, 3 adits (gate), 1 pit (backfill)	2007	2008	\$12,000	None
7. BFO - Marysville (moderate use – hunting, snowmobile)	1) Marysville Project, 3 sites, 6 features A) Empire Mine – 2 features B) Towsley Mine – 3 features C) Nile Mine West – 1 feature	2008	2009	\$18,000	None
8. BFO – Free Enterprise (Isolated – moderate use – hunting)	A) Free Enterprise Mine – 1 site, 1 feature	2009	2010	\$3,000	None
9. BFO – Spring Creek (low use – isolated)	1) Spring Creek Project, 2 sites, 4 features A) UM-PP sites 4 & 5 – 2 features B) Finn Gulch – 2 features	2010	2011	\$12,000	None
Dillon Field Office					
10. DFO – Sheep Creek (moderate use – near FS campground)	A) Sheep Creek – 1 site, 3 to 5 features	2006	2007	\$25,000	None
11. DFO – Rochester (Low to moderate use? – hunters, miners)	1) Rochester Project – 8 sites, 54 features (background surveys complete)	2004	2010	\$141,000	None
12. DFO – Montana Boy (low use area)	Montana Boy - 1 site, 1 features	2010	2011	\$3,000	
13. DFO – Pony Creek	1) Pony Creek – 1 site, 3 features A) Pony #4 B) Pony #4 C) Pony #6	2010	2011	\$9,000	
14. DFO - Jefferson River (low use area – hunters)	1) Jefferson River Project, 2 sites, 10 features A) Galena Mine (mix of pvt) – 4 features B) Paupers Dream – 6 features – inaccessible	2011	2012	\$30,000	
15. DFO – Ruby River (Low use)	1) Ruby River Project 3 sites, 3 features A) Sand Coulee Au Dep. – 1 features B) Latest Mine Out – 1 feature C) Buckeye – 1 feature (may do in conjunction with adjacent state water q quality project) (Check claim status of South Broadguage Tamarack)	2012	2013	\$15,000	
16. DFO – Alder Gulch	1) Alder Gulch Project - 1 site, 1 feature A) Batton Brothers Mine – 1 feature (Monitor active claims in the area)	2012	2013	\$3,000	
17 DFO – Rattlesnake Cr. (low to moderate use)	1) Rattlesnake A) Groundhog – 1 site, 1 feature B) Goodview – 1 site “several” features				

Missoula Field Office					
18. MFO - Blackfoot (Coloma site is in high use recreation area)	1) Blackfoot Project – 2 sites, 2 features A) Coloma North – 1 feature C) Leonard – 1 feature	4 BH in 2006 or 2007	2007	\$5,200	None
19. MFO – Clark Fork (Medium to low use recreation areas)	1) Clark Fork Project – 5 sites, 8 features A) Silver King (4 features) B) Toy Town II – 1 feature C) Montana – 1 feature D) Cave Hill – 1 features E) Sunrise – 1 feature	5 sites BH in 2007	HP in 08	\$24,000	None

South Dakota Field Office					
20. Black Hills Exemption Area	2 Features	2006	2010	\$10,000	None

Malta Field Office					
21. Little Rockies	6 Features	2006	2010	\$15,000	None

Lewistown Field Office					
22. Judith and Moccasin Mountains	6 Features	2006	2010	\$15,000	None

Table 3. FY2007 – FY2013 Workload Targets

PE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
BH	BFO = 1 Iron Mask DFO = 8 Camp Cr 8 MFO = 5 Clark Fork 5 Total = 14	BFO = 3 Marysville 3 DFO = 0 MFO = 0 MaltaFO=6 Total = 9	BFO = 2 Free Enterprise (1) Hard Cash = 1 DFO = 0 MFO = 0 SDFO=2 Total = 4	BFO = 0 DFO = 2 MT Boy (1) Pony Cr (1) MFO = 0 LFO=6 Total = 8	BFO = 2 Spring Cr. Project (2) DFO = 2 Jefferson R (2) MFO = 0 Total = 4	BFO = 0 DFO = 5 Ruby R (2) Alder (1) Rattlesnak e (2) MFO = 0 Total = 5	BFO = 0 DFO = 0 MFO = 0 Total = 0	44
HP	BFO = 6 Scratchgravel 2 Keating Safety Project 3 Big Indian 1 DFO = 1 Sheep Cr. 1 MFO = 4 Blackfoot Projectt 2 Total = 9	BFO = 9 Fish2Heart (1) Camp Creek Project (8) DFO = 0 MFO = 5 Clark Fork (5) Total = 14	BFO = 3 Marysville Project (3) DFO = 0 MFO = 0 MaFO=6 Total = 9	BFO = 2 Iron Mask (1) Free Enterprise (1) DFO = 8 Rochester (8) MFO = 0 SDFO=2 Total = 12	BFO= 0 DFO = 2 MT Boy (1) Pony Cr (1) MFO = 0 LFO=6 Total = 8	BFO = 2 Spring Cr Project (2) DFO = 22Jefferso n R. (2) MFO = 0 Total = 4	BFO = 0 DFO = 3 Ruby R. (2) Alder (1) Rattlesnak e (2) MFO = 0 Total = 3	59

JK	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 4..3 Great Divide (4.3 acres) DFO = 0 MFO = 0 Total = 9..3	BFO = 55 Indian Cr Dredge Iron Mask (~5) DFO = 0 MFO = 0 Total = 55	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = ~5 Hard Cash DFO = 0 MFO = 0 Total = ~5	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	69.3 Acres
NP	BFO = 1 Iron Mask DFO = 0 MFO = 0 Total = 1	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	1
NQ	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	BFO = 0 DFO = 0 MFO = 0 Total = 0	0

* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring, NP=Evaluate Cost Avoidance/Cost Recovery, NQ=Process Hazmat Cost Avoidance/Cost Recovery Cases

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NEVADA

Abandoned Mine Land Workplan

Period: FY2007 – FY2013

Summary

Significant mining areas in Nevada are very widely dispersed statewide, with no areas un-mined. Depending on definition, the number of recognized mining districts numbers in the hundreds. Commodities mined or sought were primarily precious metals, other metals, aggregate materials, and virtually all other metals including mercury and uranium.

BLM Nevada currently has an inventory of 166,000 known abandoned hardrock mines on public lands. This inventory includes 13 mines that may impact water resources within 7 priority watersheds; over 50,000 sites likely pose physical safety hazards. To date, 5 water quality projects (Veta Grande, Atronics, Stewart Mill, Golden Butte, Easy Jr.) have been completed. Several others are scheduled for completion in 2006. About 200 sites with physical safety hazards have been remediated, primarily by backfilling, with some gated and foamed.

AML Watershed Projects

There are at least 13 abandoned mines on BLM in Nevada that have possible impacts on water quality of 7 priority water sheds. These impacts include acidic metal laden drainage from mine openings and dumps, mine wastes in stream channels, cyanide and other chemicals, trash, petrochemicals, and erosion of mine wastes into waterways. The 7 highest priority watersheds impacted by abandoned mines on public lands include, in priority order, the Meadow Valley Wash, Humboldt River, Colorado River, Reese River, and various interior basins. Work is underway in all of these watersheds, involving 7 of priority watershed projects.

The watersheds were prioritized on the basis of assessment undertaken by the Nevada Abandoned Mined Lands Environmental Task Force, consisting of representatives from BLM, U.S. Forest Service, U.S. Fish and Wildlife Service, The Army Corps of Engineers, the Bureau of Reclamation, the University of Nevada, the Desert Research Institute, The Nevada Division of Minerals, Nevada Department of Environmental Protection, Nevada Department of Wildlife, U.S. Geological Survey, and Nevada Bureau of Mines and Geology. Prioritization of the water-quality impacted AML sites was accomplished using the following criteria, in order of consideration: site ownership, involvement of other agencies (e.g. Superfund), surface and/or groundwater contamination or potential, feasibility, cost, public health and safety issues, proximity to human habitation or areas of high public use, threatened water wells, threatened protected species, environmental sensitivity, toxicity (zone and type of contamination, geologic setting and background, and available information. Other criteria, not in any particular order, included public perception, proximity to intermittent streams, NEPA requirements, the possibility that some sites may be better left alone (such as mercury contamination in the Carson river), the possibility of re-mining or reprocessing wastes on site, and the short and long term effectiveness of reclamation/mitigation.

Table 1.

Priority Watershed Projects							
WATERSHED	PROJECTS FUNDED/ PLANNED	# AMM Sites	FY START	FY FINISH	EST TOTAL COST	EST BLM PORTION	KEY PARTNERS
1. Carson	Veta Grande Mine/Mill	1	1999	2005			CHF, EPA, RAMS, BOR
2. Upper Humboldt	Rip van Winkle Mine/Mill	1	2003	2006	1,000,000	1,000,000	CHF, RAMS, Trout Unlimited
3. Reese River	Monarch Mill Site	1	2004	2006	500,000	500,000	
4. Meadow Valley Wash	Johnston Mine/Mill	1	2004	2007	1,500,000	500,000	RAMS
5. Central Nevada	Ward Mine	1	2006	2008	350,000	200,000	RAMS
6. Central Nevada	Norse Windfall Mine/Mill	1	2003	2009	1,500,000	1,500,000	CHF
7. Central Nevada	Argentum Mine/Mill	1	2006	2009	400,000	400,000	
8. Reese River	Elder Creek Mine	1	2005	2006	700,000	350,000	RAMS
9. Hot Creek RR Valley	Tybo Tails	1	2003	2010	1,200,000	1,200,000	CHF
10. Meadow Valley Wash	Caselton Tailings	1	2003	2010	5,000,000	5,000,000	CHF
11. Hualapai	Leadville Tailings	1	2007	2011	5,000,000	5,000,000	
12. Upper Humboldt	Dean Mine	4	2008	2009			
13. Truckee River	Perry Canyon	2	2006	2008	70,000	35,000	RAMS, EPA, Pyramid Lake Paiute Tribe

AML Physical Safety Sites

Over 1,100 high-risk mine openings have been identified on BLM managed lands in Nevada. These sites are widely distributed within the jurisdiction of all BLM field offices. The most significant types of mine hazard feature are shafts and adits remaining at AML sites in or within 1 mile of population centers, campgrounds, backcountry byways, other recreation areas, historic sites, off road vehicle use areas, and others. The most significant is the entire area of Clark County, where Las Vegas continues to lead the nation in population expansion and where outdoor recreation on public lands is intense. This area has high use for hiking, off-road racing and recreation, rock-hounding, rock-climbing, exploration, prospecting, and other dispersed and concentrated recreation. About 3.0 million dollars has been obtained from non-1010 sources to address this, but this is limited to sites with potential for significant wildlife habitat. Remaining remediation costs will depend on whether the current AML safety partnership continues, or whether work will be

contracted commercially. In the latter case, it is difficult to estimate final costs for Clark County, but perhaps \$8 million or more will be required to remediate this type of mine hazard. These mines also have significant disturbed surface areas and mine wastes that require regrading, capping and revegetation.

Remediation at key sites is guided by focused inventory assessments starting with those site clusters in closest proximity to sites with high public exposure. A comprehensive GIS analysis was conducted several years ago with extensive input from all stakeholders to identify all areas of high public use in Nevada regardless of type and all known inventories of abandoned mines in Nevada. Sites are ranked for hazard during inventory, and are fenced (mitigated) as quickly as possible. The number of sites fenced and posted in Nevada on public lands recently exceeded 10,000. An innovative backfill coalition in Nevada has begun addressing permanent remediation of high priority hazards. This includes Cashman heavy equipment dealership, Paul DeLong heavy haul trucking companies, the BLM, the Nevada Division of Minerals, the Nevada Mining Association, the Nevada Natural Heritage program, the Nevada Department of Wildlife, individual mines, University Professors and graduate students, volunteer archeologists, GEOTEMPS, and many others. When this partnership began backfilling hazards, the only cost to BLM was our own salaries and the cost of archeological/cultural and biological clearances. In the last 3 projects, we have begun doing these clearances in house with the aid of non-BLM volunteers from the partnership, and the cost to BLM has been only the cost of salaries for employees and minor travel expenses. This partnership requires intense participation from the BLM 1010 program lead which may not be sustainable given other assignments and priorities.

Table 2

Priority Physical Safety Hazard Sites					
RECREATION AND HIGH USE AREAS	# OF AMM SITES	FY START	FY FINISH	EST BLM COST	KEY PARTNERS
Las Vegas Round one	7	2001	2001	Salary only-contracted bat/cultural paid by Nevada Mining Assn.	See narrative above
Las Vegas Round Two	29	2002	2002	Salary only-contracted bat/cultural paid by Nevada Mining Assn.	See narrative above
Searchlight	41	2005	2005	25000 bat survey + salary	See narrative above
≈Rhyolite/Beatty	40	2006	2006	Salary only	See narrative above
Reno/Pyramid lake- Perry Canyon	25	2006	2006	Salary only	See narrative above
Spruce Mountain OHV area- Elko	40+	2005	2007?	Depends on fate of partnership	See narrative above
Virginia City	unknown	2006	2008?	Depends on fate of partnership	See narrative above

Priority Physical Safety Hazard Sites					
RECREATION AND HIGH USE AREAS	# OF AMM SITES	FY START	FY FINISH	EST BLM COST	KEY PARTNERS
Tonopah	55	2006	2006	Salary only	See narrative above
Clark County SNPLMA	270	2005	2008	\$1,700,000 but in hand from SNPLMA grant	See narrative above
Clark County backfills	200 est.	2007	2010	Funded by SNPLMA round 6 (\$450,000)	
Goodsprings Gates	Ca.25	2004	2007	Funded by SNPLMA round 4	

Table 3. Workload Targets

PE	FY07	FY08	FY09	FY10	FY11	FY12	FY1)	Total
BH	500	400	300	200	100			1500
HP	120	100	100	100	40			460
JK	121	330	161	114				726
NP								
NQ								

* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring, NP=Evaluate Cost Avoidance/Cost Recovery, NQ=Process Hazmat Cost Avoidance/Cost Recovery Cases

For specific details on planned, ongoing and completed projects, go to the following websites:

BLM Nevada AML web site at: <http://www.nv.blm.gov/AML/>

Army Corps of Engineers website at: <http://www.nwo.usace.army.mil/html/rams/rams.html>

Montana State University Ecosystem Restoration website at:

<http://ecorestoration.montana.edu/default.htm>

BLM NSTC website at: <http://www.blm.gov/nstc/resourcenotes/rn73.html>

Nevada Division of Minerals website at: <http://minerals.state.nv.us/programs/aml.htm>

Southern Nevada Public Lands Management Act website at: <http://www.nv.blm.gov/snplma/>

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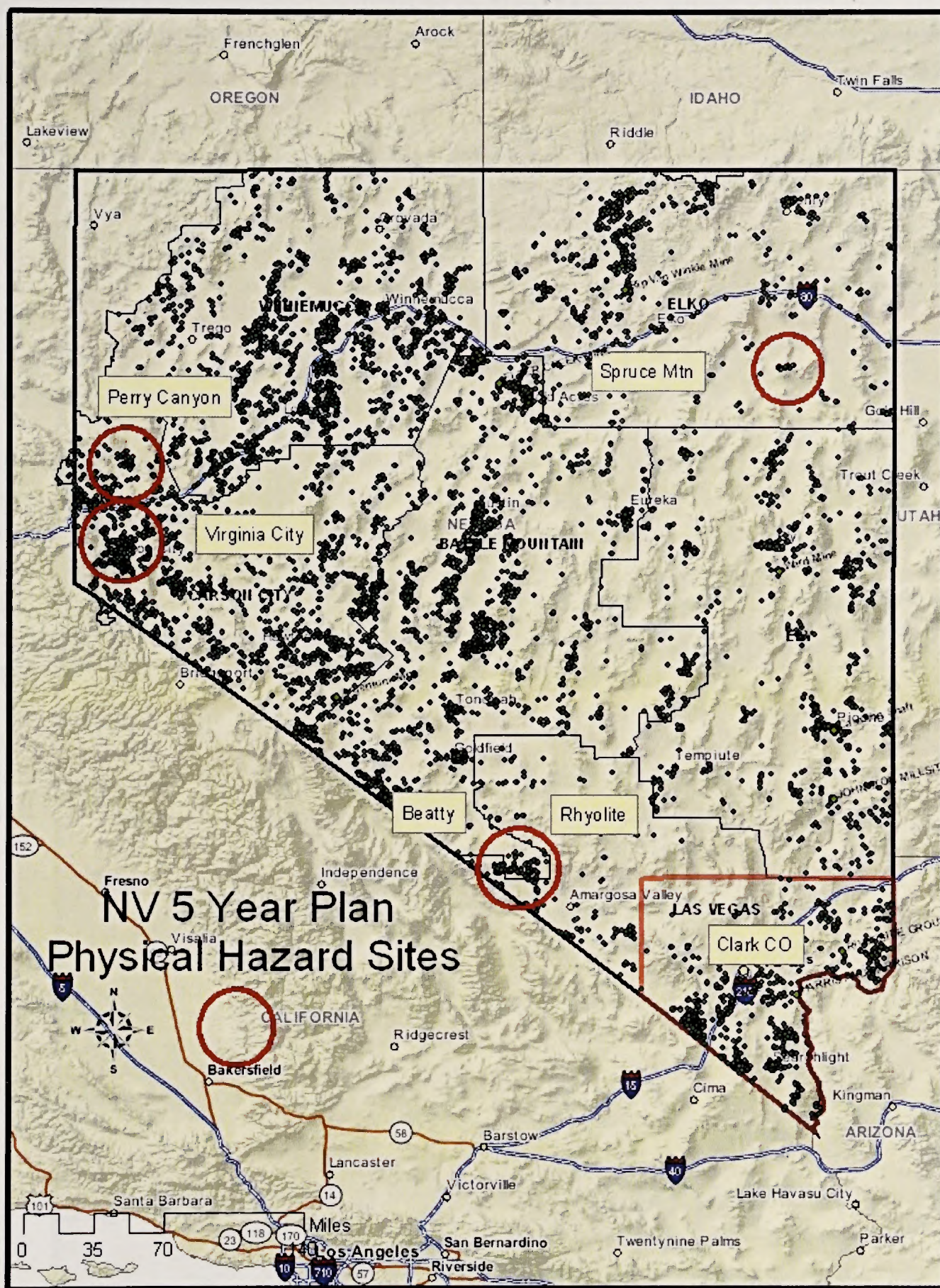
775.861.6570

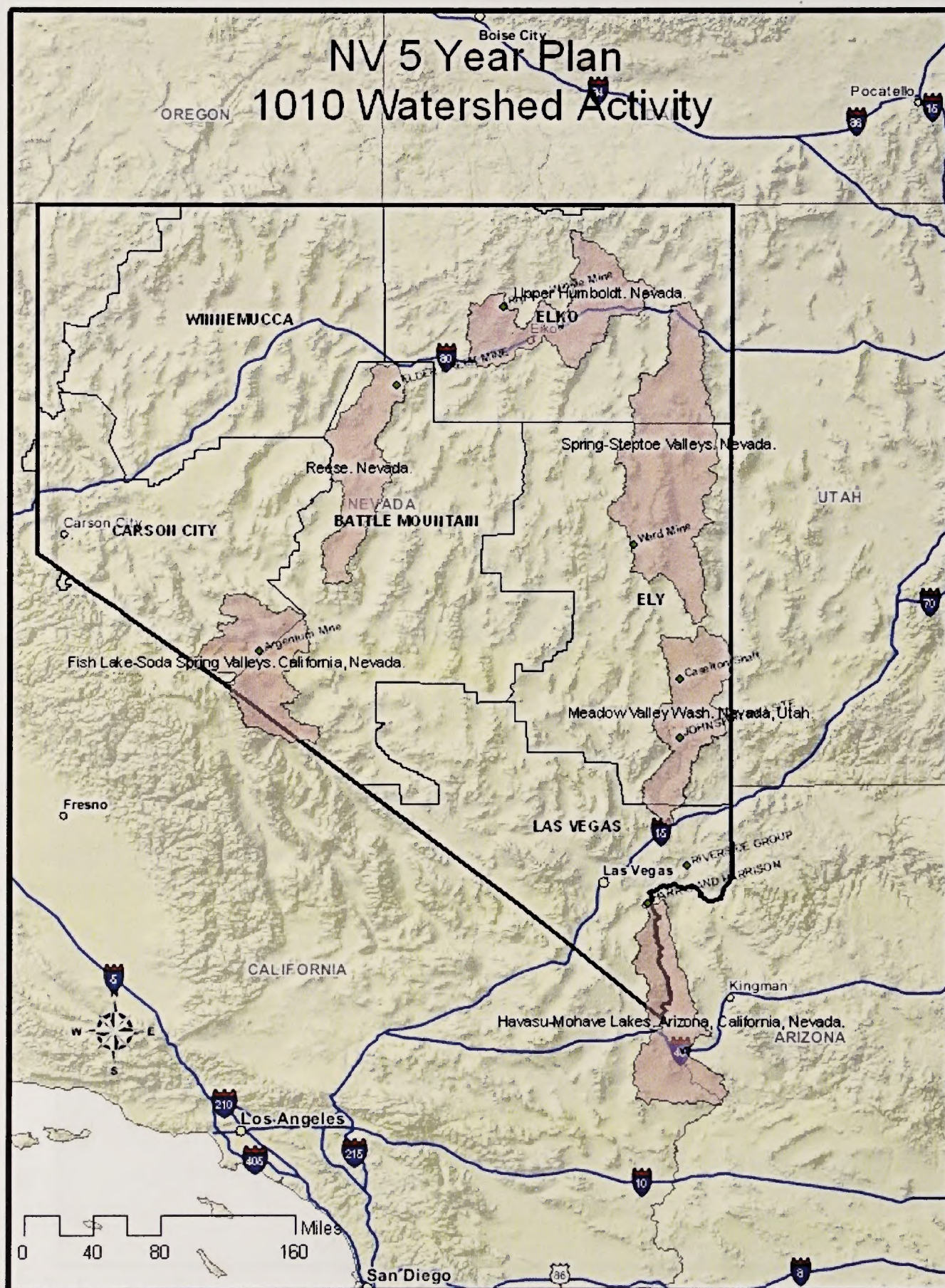
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New Mexico

Abandoned Mine Land Workplan

Period: FY2007 – FY2013

Summary

There are over 140 hardrock mining districts in New Mexico. About a half dozen are presently active, mining primarily copper, molybdenum, gold, and silver. The rest have left a legacy of scattered abandoned hardrock mine sites throughout the state.

New Mexico currently has an inventory of over 600 known hardrock abandoned mine land (AML) sites on BLM-managed land that pose physical safety hazards to the public. To date, over 200 sites on BLM land with physical safety hazards have been remediated, mostly by the New Mexico Abandoned Mine Land Bureau (NMAMLB) with fees imposed on Federal coal production under the authority of the Surface Mining Control and Reclamation Act of 1977. There are no known sites on BLM land in New Mexico that may impact water resources.

AML Physical Safety Sites

Over 2500 high-risk mine features, mostly open shafts and adits, have been identified within the 600 known AML sites on BLM managed lands in New Mexico. The sites are within the jurisdiction of the Las Cruces and Taos Field Offices. Sites that have been given priority for remediation are those near recreation sites and high public use areas. They include Lake Valley; Orogrande; Boston Hill; Cerrillos Hills, and, along the Mexico border in Hidalgo and Luna Counties. Lake Valley is an historic mining area and town along a Back Country Byway; it contains hiking trails and restored historic buildings. Orogrande is a mining district in Otero Country that is used by the public for recreational mining, hiking and exploring. Boston Hill, south of Silver City, is a planned recreational and open space area for the city. Cerrillos Hills is an historic mining area and includes a county park with hiking trails. The Mexico border is frequented by border patrol agents and undocumented aliens; many of the mine features in this area present significant physical hazards.

Table 1.

Priority Physical Safety Hazard Sites					
RECREATION AND HIGH USE AREAS	# OF AMM SITES	FY START	FY FINISH	EST BLM COST (1)	KEY PARTNERS
Lake Valley	10	2005	2008	\$20,000	New Mexico Abandoned Mine Land Bureau
Orogrande	15	2001	2007	\$35,000	New Mexico Abandoned Mine Land Bureau
Cerrillos Hills	5	1997	2006	\$15,000	New Mexico Abandoned Mine Land Bureau
Boston Hill	5	2003	2008	\$200,000	WERC (A Consortium For Environmental Education & Technology Development) NMAMLB
Border	10 (est)	2007	2012	\$200,000	New Mexico Abandoned Mine Land Bureau

Note: BLM costs include some or all the following: Inventory; coordination and consultation; inspection and maintenance; & cooperative agreements.

Table 2. Workload Targets

PE	2006	2007	2008	2009	2010	2011	2012	2013
BH	0	15	10	0	0	0	0	0
HP	2	3	3	2	2	3	3	0
JK	NA	NA	NA	NA	NA	NA	NA	NA
NP	NA	NA	NA	NA	NA	NA	NA	NA
NQ	NA	NA	NA	NA	NA	NA	NA	NA

* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring, NP=Evaluate Cost Avoidance/Cost Recovery, NQ=Process Hazmat Cost Avoidance/Cost Recovery Cases

For specific details on planned, ongoing and completed projects, go to the BLM AML web site at http://www.nm.blm.gov/nmso/aml/aml_home.htm.

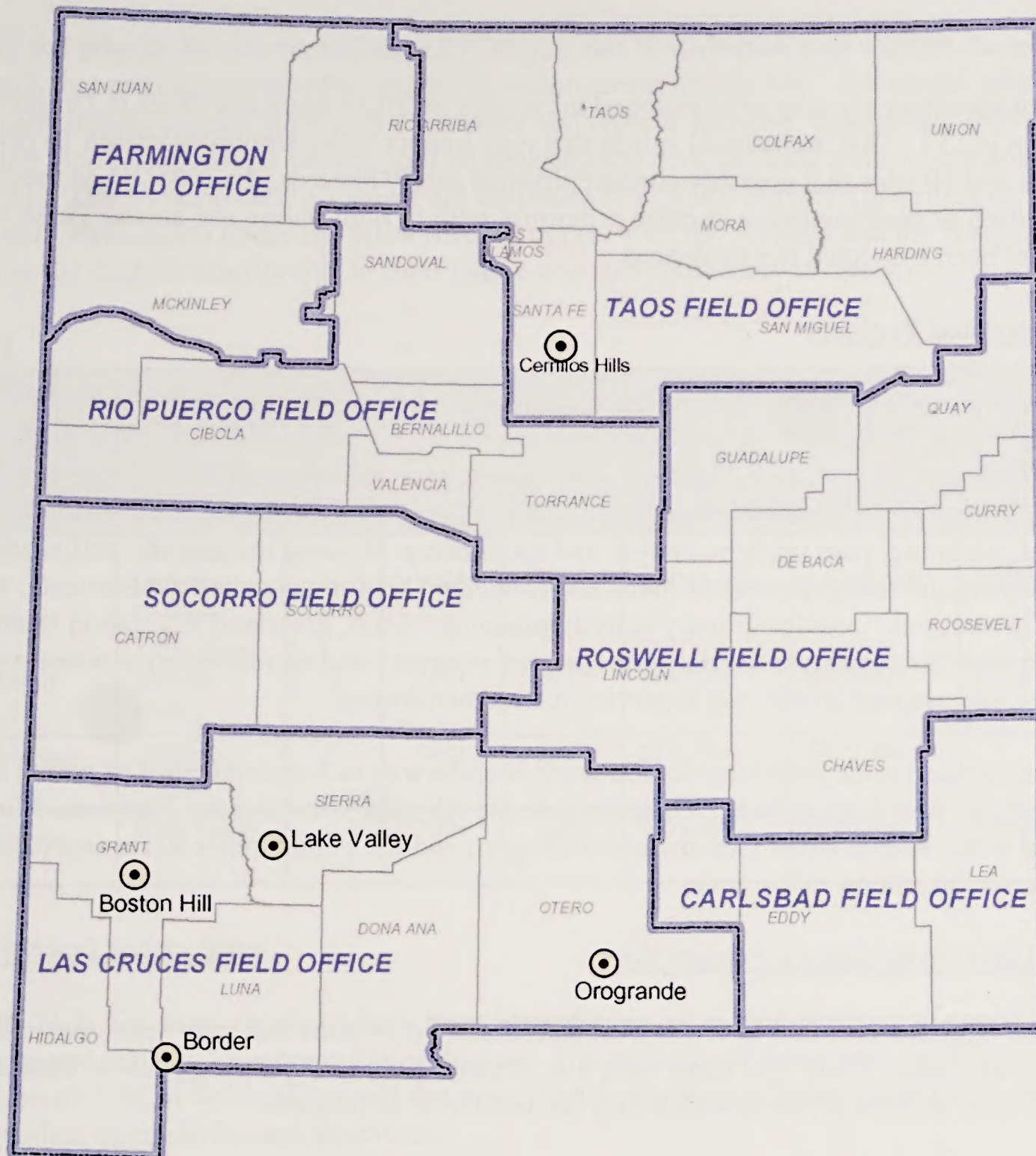
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NEW MEXICO ABANDONED MINE LAND PROGRAM

PRIORITY AML PHYSICAL HAZARDS SITES NEAR HIGH PUBLIC USE AREAS



0 12.5 25 50 75 100 Miles



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

Produced by the New Mexico Geographic Sciences Team
Santa Fe, New Mexico

October 17, 2005

LEGEND

- AML SITE
- FIELD OFFICE BOUNDARY
- COUNTY BOUNDARY

Oregon State Office

Abandoned Mine Land Workplan

FY2007 – FY2013

Summary

The current inventory number of abandoned mine sites on BLM managed lands in Oregon and Washington is 133. This includes 21 mines that may impact water resources within 10 priority watersheds and 50 sites that possibly contain physical safety hazards. In 2005, 34 of these sites were identified as possibly being in close proximity with to high public use areas. These sites have not been yet been inspected nor evaluated.

AML Watershed Projects

The watersheds in Oregon were prioritized on the basis of assessment undertaken by the Oregon Department of Environmental Quality. Prioritization of the water-quality impacted AML sites was accomplished using the following criteria: water quality limited streams; threatened or endangered plants and animals; fire hazard and fuel build-up as well as the pressing need for resource assessment; planning, plan implementation and monitoring. Among the specific actions for consideration in the selected areas of focus are: rangeland health/watershed assessments; water resources inventories; interdisciplinary activity planning; shrub, grassland vegetation treatments; stream and riparian treatment; special status species recovery and conservation actions; weed inventories; use authorizations, use supervision, and monitoring.

In 2006, abandoned mine land remediation work is underway in 5 watersheds 4 of which are in Oregon and 1 in Washington State. These include the Almeda Mine and the Josephine Mine which are located in the Rogue River (southwestern Oregon) and the Pend Oreille River (northeastern Washington) watersheds.

Saginaw Hill GIS Inventory Project Sites

In 2006, the Saginaw Hill GIS Inventory Project identified 34 sites that may have conflicts with high public use areas. Only 1 of these sites was already listed in the existing AMM database. The number of sites by field office in which they are located is as follows.

<u>Office</u>	<u>Number of Sites</u>
Coos Bay	1
Medford	14
Spokane	8
Vale	8
Salem	2
Prineville	1

To date the field offices have not been able to review and evaluate the information regarding these sites. The plan is to have each field office affected review and comment on the any known issues involving these sites and to report on the severity of those issues including the costs that may be

needed to inspect and remediate problems. The initial review is planned to be completed in the spring of 2006. This review and evaluation effort will be further addressed in the FY 2007 budget and work plan directives. The goal is to have as many of these sites as possible field inspected during the summer of 2006 to assure that no immediate and significant hazards exist.

Priority Projects

Currently the priority for site remediation in Oregon and Washington is to address those sites on BLM lands that are impacting water quality or endangering human life. Additional priorities include establishing partnerships with other state and federal agencies, conducting PRP searches, identifying viable responsible parties, and minimizing the need for long-term remediation and monitoring. The 4 sites listed in Table 1 are currently (FY 2006) the main priorities for BLM in Oregon and Washington under the 1010 AML program with the Almeda and the Josephine group sites being the highest priority due to their nature and their proximity to streams.

Table 1

Priority Watershed Projects							
WATERSHED	PROJECTS FUNDED/ PLANNED	# AMM Sites	FY START	FY FINISH	EST TOTAL COST	EST BLM PORTION	KEY PARTNERS
Pend Oreille River	Josephine Mill #2; Lookout; Yellowhead	3	2003	2010	\$1,783,000	\$1,783,000	DNR, DOE
Lower Rogue	Almeda Mine	1	2001	2012	\$483,000	\$483,000	DEQ
South Umpqua	Umpqua Mine	1	2001	2009	\$330,000	\$330,000	
McDermitt	Bretz Mine	1	2004	2013	\$750,000	\$750,000	DEQ

AML Physical Safety Sites

Over fifty high-risk mine openings have been identified in the AMM database to possibly be on BLM managed lands in Oregon and Washington. The majority of these sites are within the jurisdiction of 5 BLM field offices and the most significant types of mine hazard features identified are open adits, open shafts, and structures.

Table 2

Priority Physical Safety Hazard Sites					
RECREATION AND HIGH USE AREAS	# OF AMM SITES	FY START	FY FINISH	EST BLM COST	KEY PARTNERS
None Identified to date	50	2006	2013	\$250,000	OR DEQ, WA DEQ

Table 3 Workload Targets

PE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
BH	10	10	2	2	2	2	2	30
HP	1	2	1	1	3	0	0	8
JK	1	1	1	1	1	0	0	5
NP	1	1	1	0	1	0	0	4
NQ	0	1	1	0	1	0	0	4

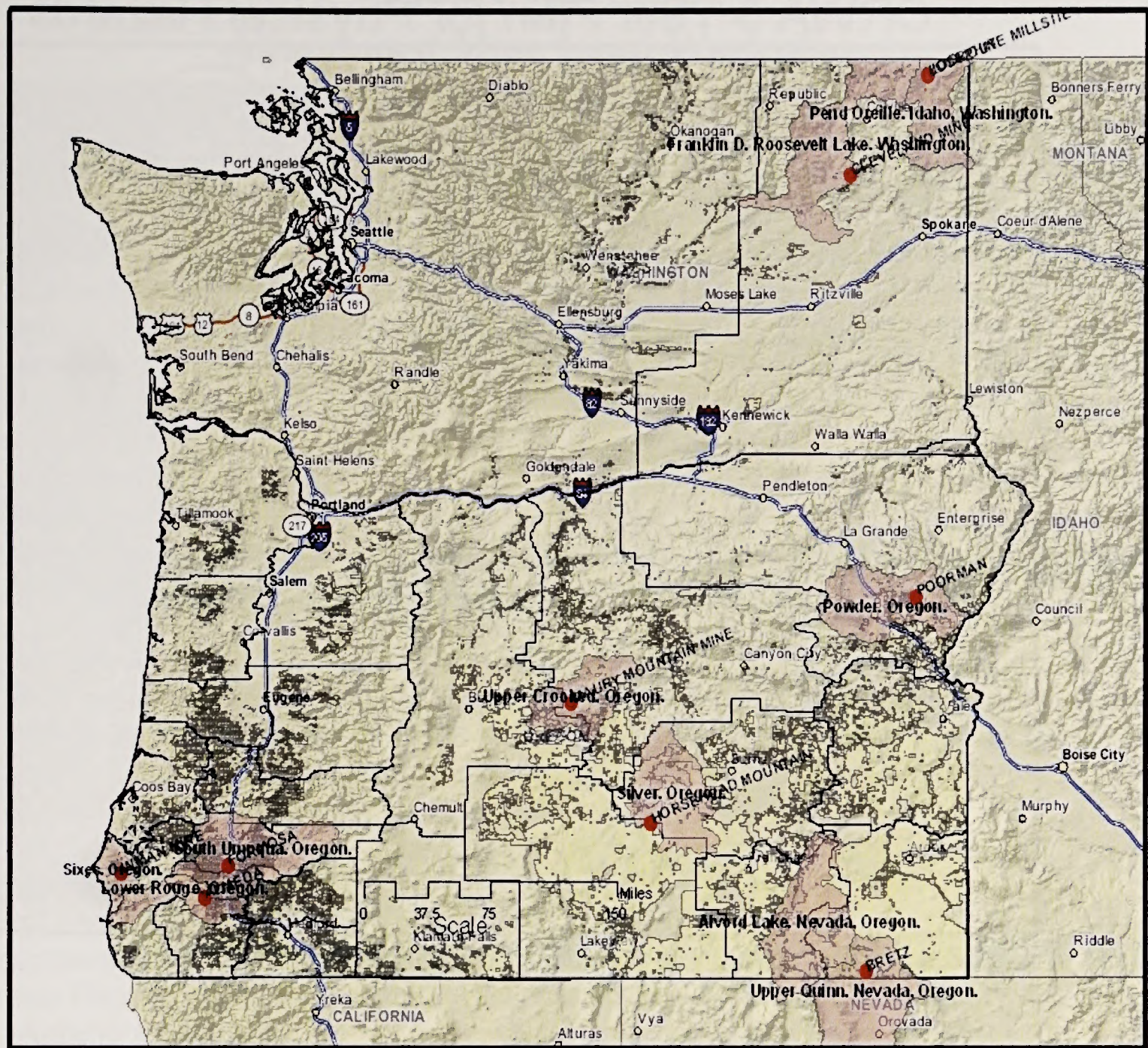
* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring, NP=Evaluate Cost Avoidance/Cost Recovery, NQ=Process Hazmat Cost Avoidance/Cost Recovery Cases

For specific details on planned, ongoing and completed projects, go to the BLM OR AML web site at (<http://www.or.blm.gov/abandonedmines>).

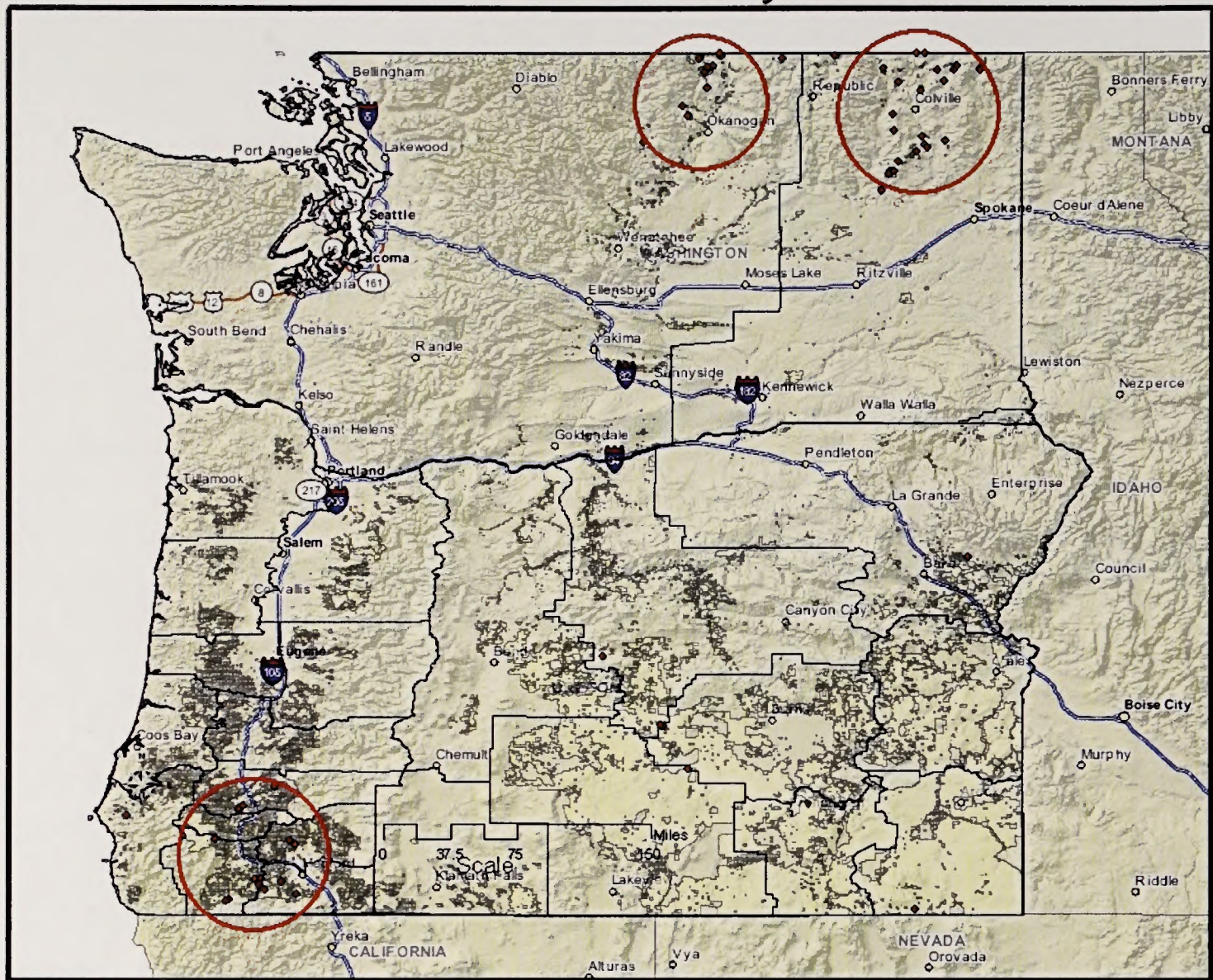
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ORWA 5 Year Plan Watersheds



ORWA 5 Year Plan for Physical Hazards



Utah State Office
Abandoned Mine Land Workplan
Period: FY2007 – FY2013

Summary

In Utah, there are 243 mining districts which illustrate the rich mining history of the state. Since there is not a complete inventory of the number of abandoned mines and this activity occurred prior to implementation of the Surface Management regulations, we can only estimate the number of openings occurring on BLM administered lands. This estimate is between 8,000-17,000 abandoned mine openings. Approximately 5-10 percent of the estimated number of openings will have an associated water quality issue. (Current work with USGS will determine whether or not uranium/vanadium mine openings and associated waste dumps pose a water quality issue because of radionuclide leaching potential. If these types of openings/features are determined to be water quality issues then approximately half or three-quarters of the openings/features will be addressed as water quality problems rather than just physical safety issues.)

The physical safety hazard aspect of abandoned mine openings has become an emerging issue in Utah. Utah is experiencing a phenomenal population growth rate which has lead to encroachment of urban interface upon old mining features and openings. In addition, recreational use of BLM administered lands is growing as rapidly as our population. The increased use of what was once considered remote lands has created a physical safety concern.

AML Watershed Projects

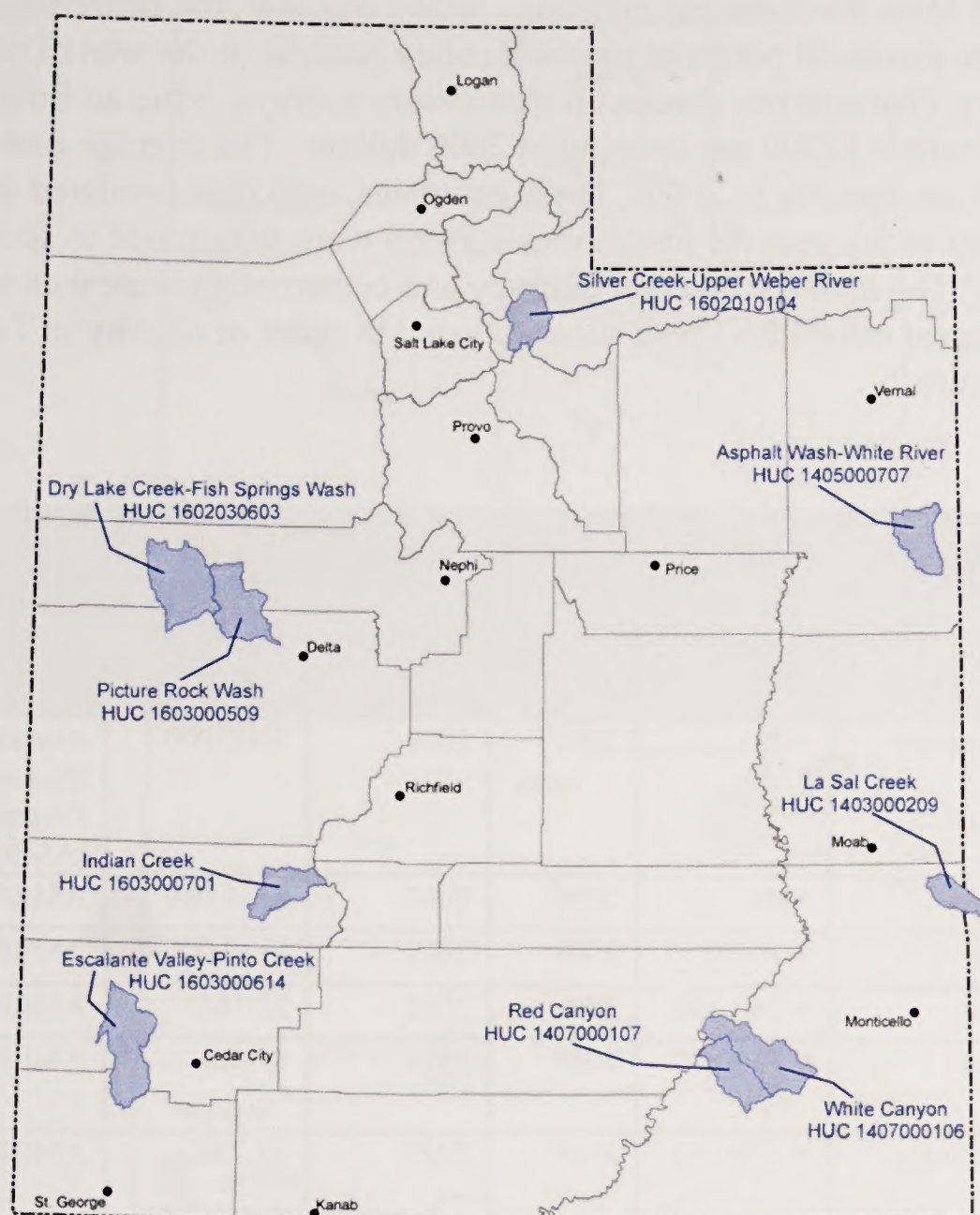
Utah Department of Environmental Quality, Division of Water Quality Nonpoint Source Management Plan for Abandoned Mines in Utah was utilized to develop BLM priority watershed projects. Appendix I of the Division of Water Quality Nonpoint Source Management Plan identified sites of most pressing concern to the State of Utah. The sites that occur on BLM administered lands or a portion of BLM administered lands are listed in Table 1 in order of priority. Figure 1 shows the location of these sites.

Preliminary cost estimates for Silver Maple Mining Claim Site, La Sal Creek Watershed Project, Fry Canyon CERCLA Site and White River Oil Shale were available and utilized to estimate project cost. These estimates were then escalated at a rate of 11 percent per year to the year of construction. The watersheds in the out years without a completed inventory utilized Utah Mineral Occurrence System (UMOS)/Minerals Availability System (MAS) data to determine the potential number of openings within the watershed. The reclamation/remediation cost estimate for these projects is based on the State of Utah, Abandoned Mine Reclamation Programs average cost of \$2,000 per opening (in 2006 dollars) for inventory, characterize, conducting necessary surveys, writing appropriate NEPA documentation. The States' average cost for closure construction is \$1,200 per opening in 2006 dollars. These estimates were then escalated separately at a rate of 11 percent per year to the year of inventory/survey and construction. These totals were added together to derive a total project cost estimate.

Table 1.

Priority Watershed Projects							
WATERSHED	PROJECTS FUNDED/ PLANNED	# AMM Sites	FY START	FY FINISH	EST TOTAL COST	EST BLM PORTION	KEY PARTNERS
1. Silver Creek-Upper Weber (1602010104)	Silver Maple Mining Claim Site	1	2003	2007	\$1M	\$1M	EPA, Stakeholders Group
2. La Sal Creek (1403000209)	La Sal Creek Watershed Project	5	2003	2009	\$1.6M	\$1.6M	Forest Service and EPA
3. White Canyon (1407000106)	Fry Canyon CERCLA site	1	2003	2013	\$2.6M	\$2.6M	Abandoned Mine Reclamation Program/DOI cost share
4. Asphalt Wash-White River (1405000707)	White River Oil Shale	3	2002	2009	\$9M	\$9M	Abandoned Mine Reclamation Program
5. White Canyon (14070000106) and Red Canyon (1407000107)	White Canyon Mining District	≈ 170-200 openings	2013	2018	\$3.7M	\$3.7M	Abandoned Mine Reclamation Program/DOI cost share
6. Red Canyon (1407000107)	Red Canyon Mining District	≈ 160-200 openings	2013	2019	\$4.2M	\$4.2M	Forest Service and State AMRP
7. White Canyon (1407000106)	Fry Canyon Mining District	≈ 70-90 openings	2014	2020	\$2.2M	\$2.2M	Abandoned Mine Reclamation Program
8. Dry Lake Creek-Fish Springs Wash (1602030603) and Picture Rock Wash (1603000509)	Drum Mountains Mining District	≈ 190-200 openings	2017	2021	\$5.5M	\$5.5M	Abandoned Mine Reclamation Program
9. Indian Creek (1603000701)	Mineral Mountain (Granite Mining District)	≈ 80-100 openings	2018	2022	\$3.2M	\$3.2M	Abandoned Mine Reclamation Program
10. Escalante Valley-Pinto Creek (1603000614)	Antelope Range Mining District	≈ 80-100	2019	2023	\$3.6M	\$3.6M	Abandoned Mine Reclamation Program

Figure 1



Utah BLM Abandoned Mine Lands Program Multi Year Work Plan Priority Watershed Projects 2006 - 2013

US Department of the Interior
BUREAU OF LAND MANAGEMENT
Utah State Office
Salt Lake City, Utah

0 25 50 100 Miles

Date Prepared: 1/31/2006

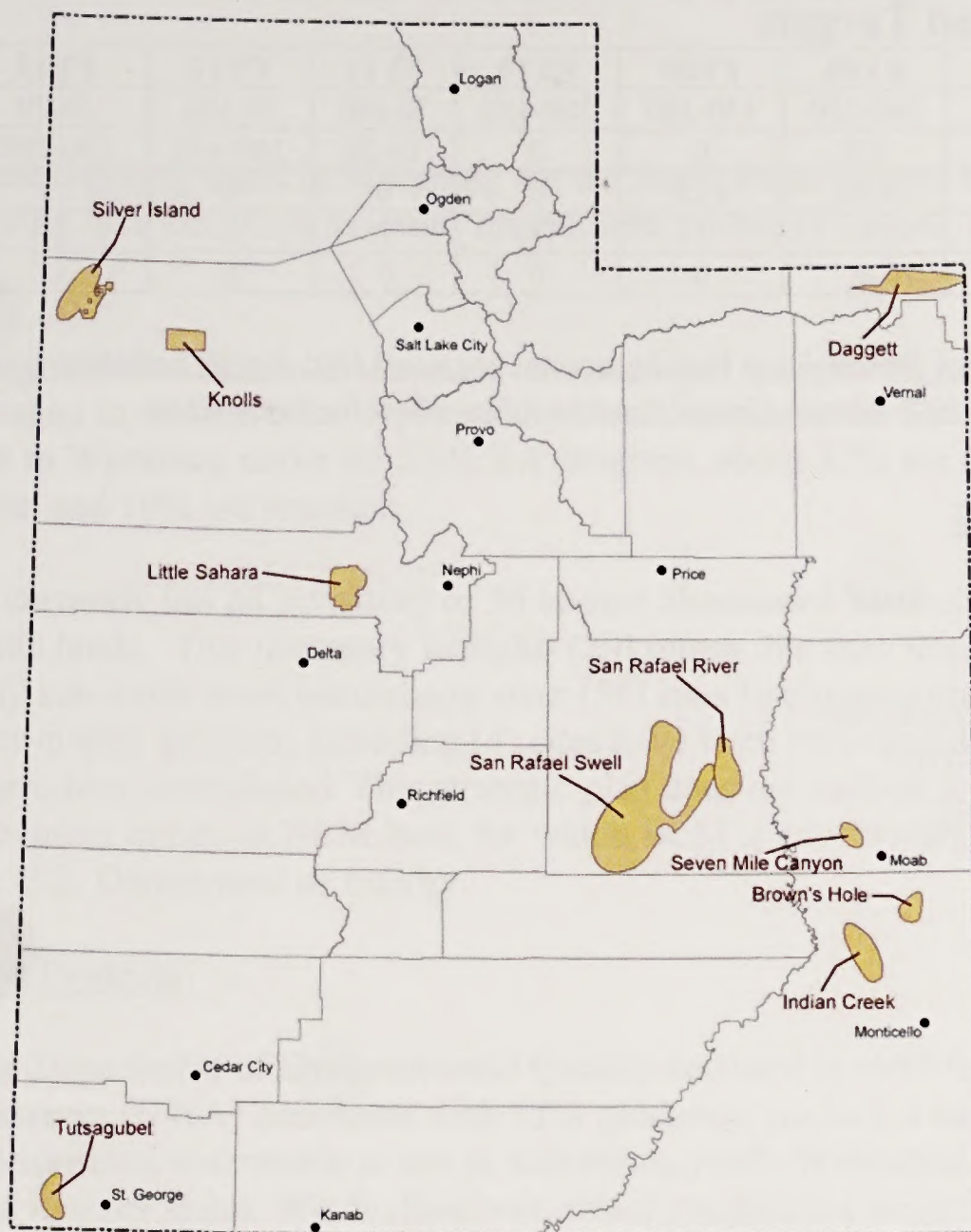
AML Physical Safety Sites

Recreational data was requested and received from the majority of the field offices. This information was utilized with UMOS/MAS data to determine the potential number of openings within the high priority recreation areas. In addition, we consulted with the Utah Division of Oil, Gas and Mining, Abandoned Mine Reclamation Program. When possible, the entire mining district will be inventoried in order to assess all potential physical safety hazards in the area of concern. The average cost to inventory, characterize, conduct the necessary surveys, write an Environmental Assessment and design a closure is \$2000 per opening in 2006 dollars. The average cost to construct a closure is \$1,200 per opening in 2006. These estimates were then escalated separately at a rate of 11 percent per year to the year the inventories/surveys were anticipated to occur and the year construction is planned. The total for inventory/survey and construction were then added together to provide a project cost estimate. These sites are listed in order of priority in Table 2 and their location depicted in Figure 2.

Table 2

Priority Physical Safety Hazard Sites					
RECREATION AND HIGH USE AREAS	# OF AMM SITES	FY START	FY FINISH	EST BLM COST	KEY PARTNERS
1. San Rafael Swell Special Recreation Area	≈ 181	2005	2009	\$600,000	Abandoned Mine Reclamation Program (AMRP)
2. Brown's Hole-popular jeep area	≈ 40	2006	2008	\$155,000	AMRP
3. Little Sahara	≈ 10-20	2007	2011	\$110,000	AMRP
4. San Rafael River AML Project	≈ 240-350	2008	2012	\$2.1M	AMRP
5. Salt Flats (Silver Island Mining District)	≈ 150-200	2009	2013	\$1.4M	AMRP
6. St. George Area (Tutsagubet Mining District)	≈ 100-150	2010	2015	\$1.2M	AMRP
7. Cotter Mine Area (Seven Mile Canyon Mining District)	≈ 70-100	2011	2016	\$1M	AMRP
8. Mineral Canyon (Indian Creek Mining District)	≈ 70-100	2012	2017	\$1.2M	AMRP
9. Brown's Park (Daggett Mining District)	≈ 20	2013	2018	\$260,000	AMRP
10. Knolls	≈ 10-30	2014	2019	\$440,000	AMRP

Figure 2



**Utah BLM Abandoned Mine Lands Program Multi Year Work
Plan Priority Physical Safety Hazard Areas 2006 - 2013**

US Department of the Interior
BUREAU OF LAND MANAGEMENT
Utah State Office
Salt Lake City, Utah

0 25 50 100 Miles

Date Prepared: 1/31/2006

Workload Targets

The workload targets are based on the above projects begin funded in the fiscal years proposed. If funding is delayed then workload targets will correspondingly be delayed until properly funded.

Table 3. Workload Targets

PE	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
BH	220	10-20	240-350	150-200	100-150	70-100	70-100	10-20	870-1160
HP	22	70	470	0	0	10-20	240-350	150-200	962-1132
JK	0	2.23	2.02	4.21	0	0	0	3.7	12.16
NP	1	0	0	1	1	1	0	0	4
NQ	0	0	0	0	0	0	0	0	0

* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring, NP=Evaluate Cost Avoidance/Cost Recovery, NQ=Process Hazmat Cost Avoidance/Cost Recovery Cases

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WYOMING STATE OFFICE
Abandoned Mine Land Workplan
Period: FY2007 – FY2013

Summary

Significant hardrock mining areas in Wyoming are the South Pass, Copper Mountain, and Encampment mining districts. Commodities mined were primarily copper, gold, silver, and tungsten.

In 1986, Wyoming certified that it had initiated or completed work on all hazardous abandoned coal mines and began to reclaim other types of abandoned mines in the State. Of AML sites reclaimed to date in Wyoming under the SMCRA program, about 32% are coal, 18% are hardrock, 40% are bentonite, and 10% are uranium.

BLM Wyoming currently has an inventory of 56 known abandoned hardrock mines (excluding uranium) on public lands. This inventory includes (20) mines that may impact water resources within (4) priority sub-basin level watersheds; over (56) sites likely pose physical safety hazards. To date, (4) water quality projects, including (4) sites have been remediated. (2) sites with physical safety hazards have been remediated. This strategic plan does not include a discussion of the reclamation of uranium mines on BLM land, for which BLM is cooperating with the State AML Division and the U.S. Department of Energy.

AML Watershed Projects

Because the State Department of Environmental Quality declined in 1999 to complete a Unified Watershed Assessment (UWA) consistent with EPA guidance, we lack a standard comprehensive list and map of prioritized watersheds to use in addressing AML/Watershed issues on a priority basis as practiced in other states. We do, however, select cooperative projects within common watersheds as much as possible. BLM reviewed the State's 2002 AML Mine Site Reclamation Database and compiled 3 lists of sites, those sites with safety and environmental problems, those with only safety problems, and all mine sites near recreation sites and urban areas. Each list shows the mine site's rank by the type and severity of hazard. BLM is coordinating with the State AML to select the highest priority sites from those 3 lists. Site characterization data is then extracted from the database to prepare project proposals for funding and task orders with the State AML.

There are (20) abandoned hardrock mines on public lands in Wyoming that have possible impacts on water quality of (4) priority sub-basin level watersheds. These impacts include contaminated sediment transport to waters of the state, acidic metal laden drainage from mine openings and dumps, mine wastes in stream channels, and erosion of mine wastes into waterways. The (4) highest priority sub-basin level watersheds impacted by abandoned mines on public lands include, in priority order, the Sweetwater, Bad Water, Upper Bighorn, and Lower Wind. Work is underway in (2) of these sub-basin level watersheds, involving (7) priority watershed projects.

The watersheds were prioritized on the basis of assessments undertaken by the BLM and the Wyoming Abandoned Mine Land Division. Prioritization of the water-quality impacted AML sites

was accomplished using analysis of water, soil, and tailings samples (e.g., toxic metal concentration in water, saturated paste extract of tailings). These watersheds were identified and prioritized for those involving BLM AML projects on an annual basis by both the BLM and the Division. The final priorities identified for watershed based projects are established through mutual agreement with the Wyoming State Abandoned Mine Lands Division.

Table 1.

WATERSHED	Priority Watershed Projects						
	PROJECTS FUNDED/ PLANNED	# AMM Sites	FY START	FY FINISH	EST TOTAL COST	EST BLM PORTION	KEY PARTNERS
1. Sweetwater	South Pass	6	2007	2013	\$281,100	\$281,100	Division of AML
2. Lower Wind	Copper Mtn	13	2007	2013	\$585,700	\$585,700	Division of AML
3. Upper Bighorn	Cedar Ridge	1	2010	2014	\$507,000	\$507,000	Division of AML

These are general estimates based on the following assumptions: 1-schedules were established assuming an average project life of at least 3 years; 2-construction costs were available for all sites, but preparation costs for clearances, EAs, survey/design were estimated based on a comparison of these costs to construction costs for a representative State AML Regional Project 17I. These preparation costs ranged from 30% to 200% depending upon the complexity of resource issues, accessibility and size of the mine sites (WYDEQ/AML2006). Final costs are determined only after detailed on-site survey and design. Most of the sites are entirely on BLM land. A few have mixed ownership which will reduce total BLM costs to some degree.

AML Physical Safety Sites

Over 56 high-risk hardrock mine openings have been identified on BLM managed lands in Wyoming. The majority of these sites are within the jurisdiction of 3 BLM field offices (Lander, Rawlins, and Casper). The most significant type of mine hazard features are open shafts and adits and highwalls remaining at AML sites in the South Pass district (recreation area), the Copper Mountain district (high use area), the Encampment district (recreation area), the Haystack district (high use area), and the Jelm Mountain district (high use area). All these areas have high use for a combination of activities including fishing, hunting, mountain biking, backpacking, off-road vehicle use, rockhounding, and snowmobiling. Over \$1,000,000 will be required to remediate these mine hazards. These mines also have significant disturbed surface areas and mine wastes that require regrading, capping and revegetation.

Remediation at key sites is guided by focused inventory assessments starting with those site clusters in closest proximity to sites with high public exposure.

Table 2

Priority Physical Safety Hazard Sites					
RECREATION AND HIGH USE AREAS	# OF AMM SITES	FY START	FY FINISH	EST BLM COST	KEY PARTNERS
1. South Pass	9	2007	2015	\$204,200	Division of AML
2. Copper Mtn	9	2007	2013	\$164,000	Division of AML
3. Encampment	9	2007	2015	\$129,500	Division of AML
4. Haystack	9	2008	2015	\$201,000	Division of AML
5. Jelm Mtn	9	2008	2014	\$211,000	Division of AML
6. Prospect Mtn.	9	2009	2013	\$33,050	Division of AML
7. Isolated sites*	9	2009	2014	\$160,360	Division of AML

These are general estimates based on the following assumptions: 1-schedules were established assuming an average project life of at least 3 years; 2-construction costs were available for all sites, but preparation costs for clearances, EAs, survey/design were estimated based on a comparison of these costs to construction costs for a representative State AML Regional Project 171. These preparation costs ranged from 30% to 200% depending upon the complexity of resource issues, accessibility and size of the mine sites (WYDEQ/AML2006). Final costs are determined only after detailed on-site survey and design. A few have mixed ownership which will reduce total BLM costs to some degree. *-Cottonwood Creek, Okie Trail, Leucite Hills

Table 3. Workload Targets

PE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
BH	3	7	8	9	10	8	8	53
HP	3	4	4	4	5	5	5	30
JK	2	4	6	8	8	6	6	40
NP	3	7	8	9	10	8	8	53
NQ	--	--	--	--	--	--	--	unkn

* BH=Inventory/Assessment, HP=Physical Hazard, JK=Environmental Hazard, MG=Monitoring, NP=Evaluate Cost Avoidance/Cost Recovery, NQ=Process Hazmat Cost Avoidance/Cost Recovery Cases

These are general estimates based on the following assumptions: 1-schedules were established assuming an average project life of at least 3 years; 2-each site qualifies as a BH, HP, JK, and NP unit as appropriate; 3-the average area of disturbance for a JK site is approximately 2 acres.

For specific details on planned, ongoing and completed projects, go to the BLM Wyoming AML web site at <http://web.wy.blm.gov/> or the Wyoming State Abandoned Mine Land Division website at <http://state.wy.us/aml>.

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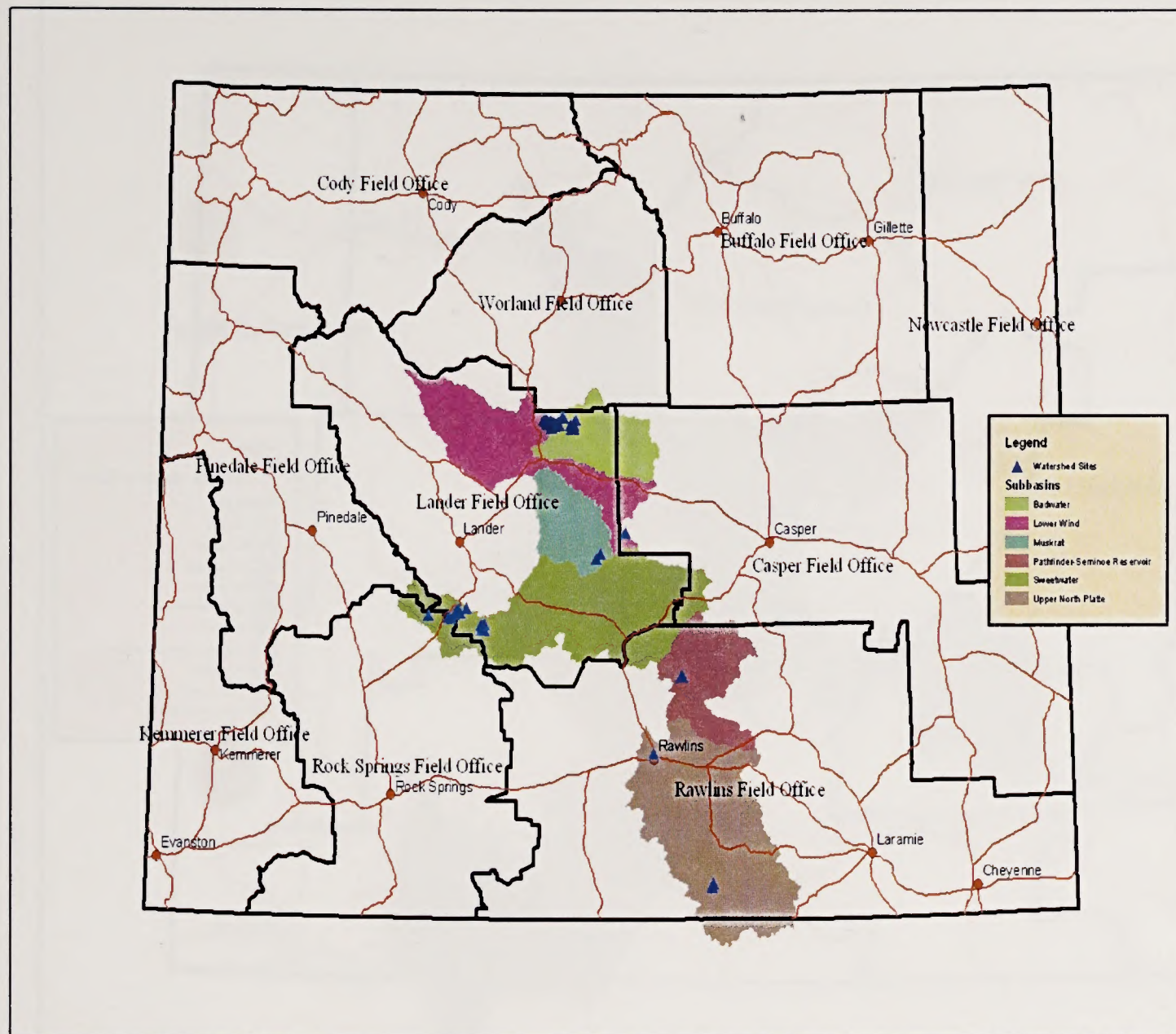
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WYOMING PRIORITY WATERSHED SITES



WYOMING PRIORITY SAFETY HAZARD SITES

